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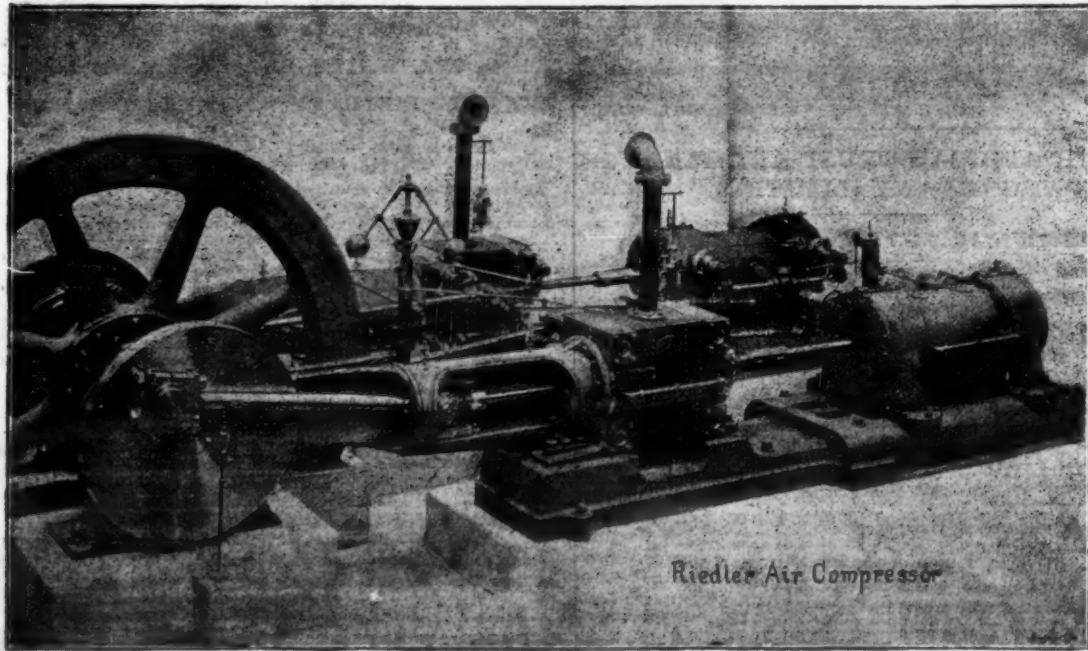


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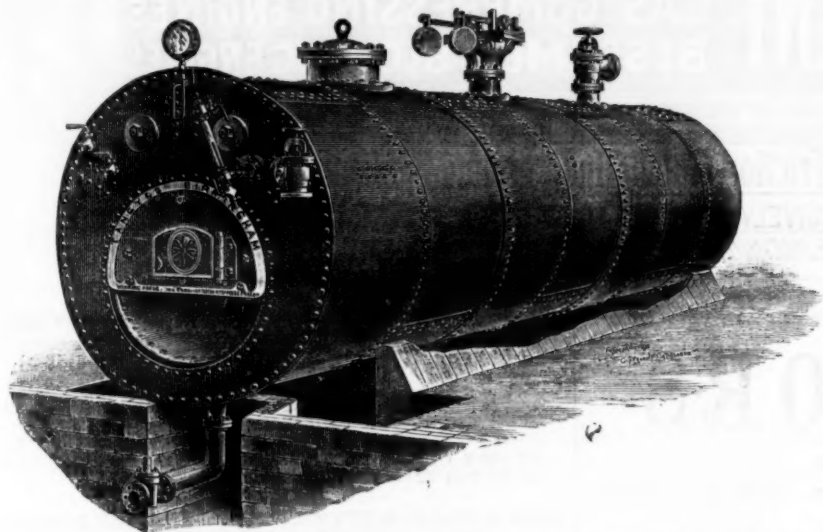
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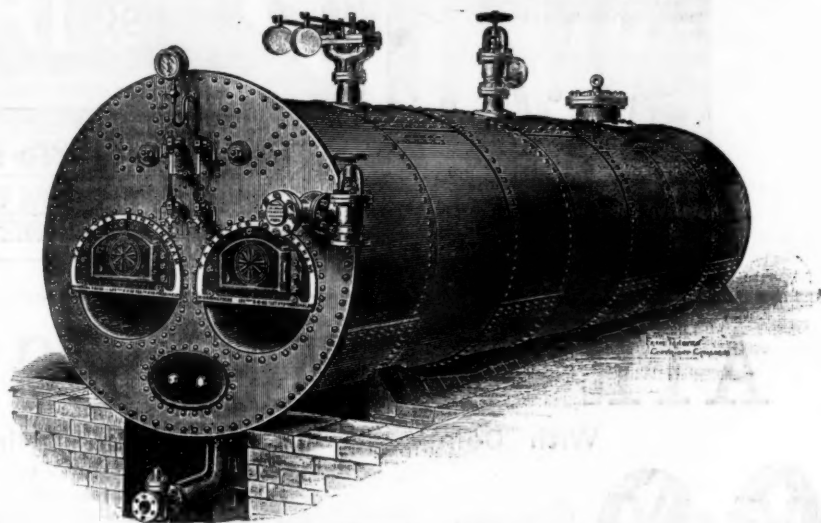
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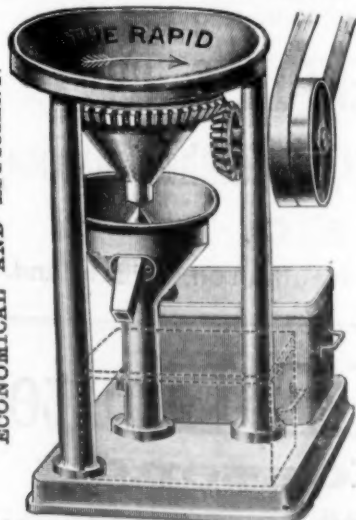
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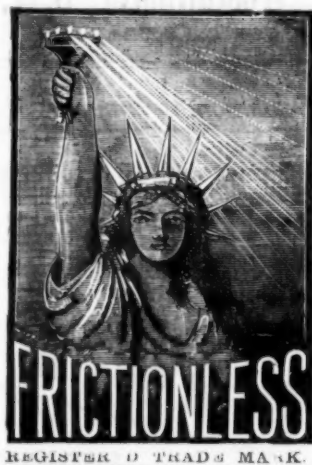
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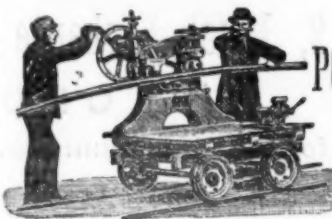
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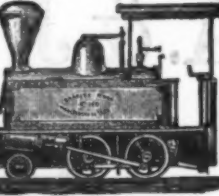
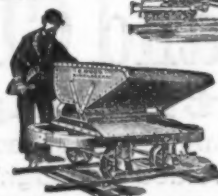
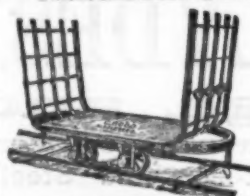
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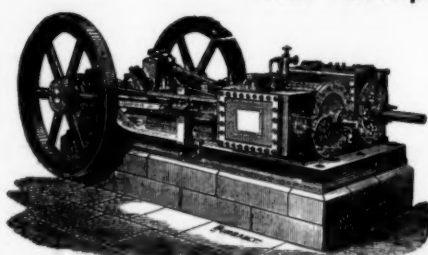
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Fisher & Walkers' Patent Friction Clutch & Underground Haulage Machinery
 THIS GEARING IS NOW EXTENSIVELY IN USE FOR HAULAGE PURPOSES. *

The objects attained are SIMPLICITY, ENDURANCE OF THE MACHINERY AND ROPES with a MINIMUM EXPENDITURE OF POWER.

AIR COMPRESSORS

With Compound Air and Steam Cylinders,
 Fitted with SCHRAM'S Inlet and Outlet Valves giving the greatest efficiency.



SCHRAM'S IMPROVED Rock Boring Machines.

Supplied to the Indian, Colonial, and other Governments.
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DIAMOND PROSPECTING DRILLS.

"OPTIMUS" COMPOUND ROCK DRILL.

(P. J. OGLES PATENT.)

Consumes 40 per cent. less Compressed Air than any other Drill at the same time giving the most effectual results.

ESTIMATES AND FULL PARTICULARS ON APPLICATION.

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TELEGRAMS: "SCHRAM, LONDON," AL, A.B.C. and The Engineering Telegraph Codes Used.

Telegrams—Green, Foundry, Aberystwyth.

SILVER MEDALS AWARDED AT THE ROYAL CORNWALL POLYTECHNIC, 1872 & 1876; GOLD MEDAL AWARDED AT THE GREAT INTERNATIONAL MINING EXHIBITION, CRYSTAL PALACE, 1890.

ONLY AWARDS GIVEN FOR CONCENTRATION PLANTS

GEORGE GREEN'S PATENT Self-Acting or Automatic Ore Dressing Machinery,

A Special Plant, on a reduced scale, has been erected at the Works by which samples of METALLIC ORES—up to Five Tons may be treated, and the commercial value determined, in this way the most suitable arrangement of Plant is ascertained, a considerable advantage to intending Purchasers of Crushing and Concentrating Plant.

GOLD STAMP AND OTHER MILLS.

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Gold Medal, International Exhibition, Paris, 1889.

Gold Medal, Exhibition of Mining & Metallurgy, London, 1890.

PURE ALUMINIUM 98 to 99½ per cent. pure; guaranteed 98 per cent. minimum.

FERRO-ALUMINIUM, ALUMINIUM BRONZE, &c.,

For Iron and Steel Workers,

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And all Metal Workers.

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Sole Agents in Great Britain and Ireland for the Aluminium Industry, Co., Neuhausen, Switzerland.

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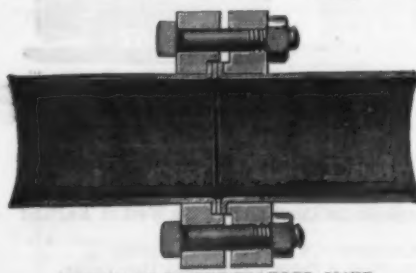
WROUGHT IRON WELDED TUBES and FITTINGS for GAS, WATER, and STEAM.

Light Lap-welded Wrought-iron and Steel Tubes
 (SPECIALLY ADAPTED FOR MINES).

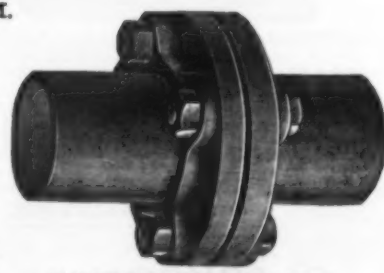
With Patent Flanged Joints (as illustrated) for the Conveyance of Water, Steam, and Air, at High and Low Pressures.

LAP-WELDED IRON AND STEEL BOILER TUBES
 FOR LOCOMOTIVE, MARINE, AND OTHER MULTITUBULAR BOILERS.

STEEL & IRON PLATES FOR BOILERS, BRIDGES, &c.



SECTION OF PATENT FLANGED JOINT



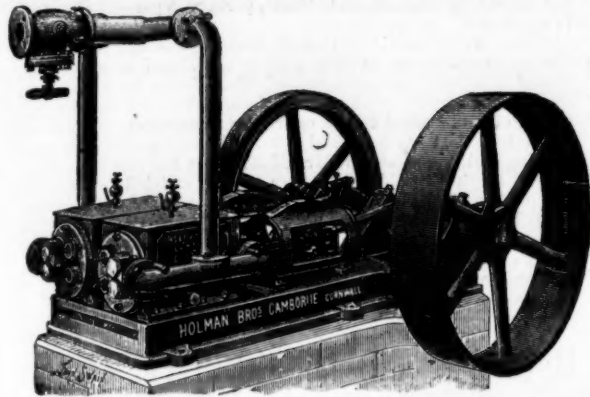
PLAN OF PATENT FLANGED JOINT.

Head Offices: **41, OSWALD STREET, GLASGOW.**

HOLMAN Bros., Camborne, Cornwall.

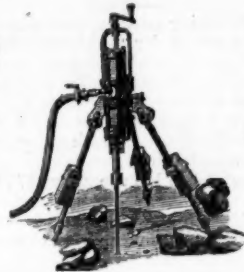
ESTABLISHED 1839.

Patentees and Sole Makers of
"THE CORNISH" ROCK DRILL and "THE CORNISH" COMPRESSOR.



FIRST
SILVER MEDAL,
Highest Award,
Mining Institute
Contest, 1881.

Three Makers
represented.



FIRST
SILVER MEDAL
Highest Award,
Royal Cornwall
Polytechnic
Jubilee Exhibition
Contest, 1882.

Five Makers
represented.

AWARDED SILVER MEDAL INTERNATIONAL
INVENTIONS EXHIBITION, 1885.

RECORD OF WORK DONE

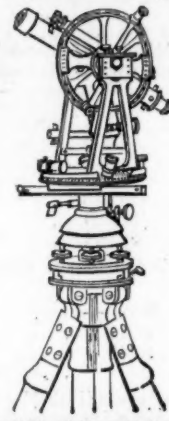
At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS**, equal to five times the Speed of Hand Labour.

At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES**, and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

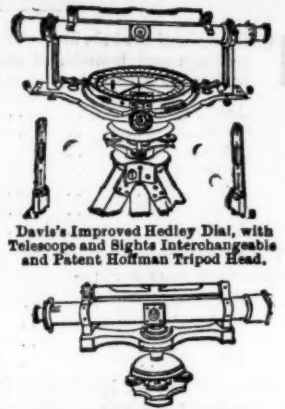
Estimates for **ROCK BORING PLANT** and **GENERAL MINING MACHINERY** on Application.

London Representative: **Mr. E. M. TOUZEAU**, Leadenhall Buildings, London, E.C.

JOHN DAVIS AND SON, ALL SAINTS WORKS, DERBY; 118, NEWGATE STREET, LONDON.



Transit Theodolite with Patent
Hoffman Tripod Head, and
Trough Compass.



Dumpy Level with
Hoffman Patent Tripod Head.

MINING, SURVEYING AND ENGINEERING INSTRUMENTS.

THEODOLITES. LEVELS.

Davis's Improved Hedley Miners' Dials with **HOFFMAN PATENT TRIPOD HEAD**,
AND ALL DESCRIPTIONS OF MATHEMATICAL AND
MINING SURVEYING INSTRUMENTS.

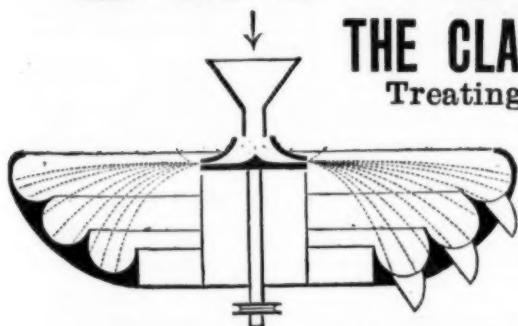
Revised Illustrated Catalogues Free to any Part of the World.
SECTION (A) MATHEMATICAL DEPARTMENT AND SAFETY LAMPS.
SECTION (B) ELECTRICAL DEPARTMENT.

Gold Medal Awarded Mining Exhibition, 1890.
"THE ENGINEERING TELEGRAPH CODE USED."

MR. P. S. HAMILTON (late Chief Commissioner of Mines of
the Province of Nova Scotia), **PRACTICAL GEOLOGIST, MINING
AGENT and MINING ENGINEER, HALIFAX, NOVA SCOTIA.**
PURCHASES and SALES of **MINING PROPERTY** effected, with careful
regard to the interests of clients.

Highest Award at the Mining Exhibition, 1890.

DRY CONCENTRATION.



THE CLARKSON-STANFIELD CONCENTRATOR (LIMITED),

Treating the ores of Gold, Silver, Copper, Lead, Tin, Zinc, Cobalt, &c., &c. of all
degrees of fineness, from 30 to the finest meshes by their **NEW**
MACHINERY which may be seen in operation at

6, COLONIAL AVENUE, MINORIES, LONDON, E.

Homogeneous substances, such as Emery, Glass, Sand, Sulphur, Black
Lead, &c., graded according to size in one operation.

Terms for Experimental Concentration, and for Supply of Machines on Application.

NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining
Metallurgical, Engineering, Railway and kindred matters,
specially compiled from official sources for the "Mining
Journal" by Messrs. Rayner and Company, Patent Agents,
37, Chancery Lane, London, W.C., who will forward all in-
formation regarding them free on application.

- 7624 John Marshall, John Fleming, and Alexander Jack, Deilburn Works,
Motherwell.—An improvement in overhead travelling cranes.—
April 16.
- 7626 David Sheritt, Dee View, Tully, Aberdeen.—A revolving guide for ropes
or cables.—April 16.
- 7633 Karl Müller, 59, Chancery Lane, London.—An improved filter for air, gas,
steam, and the like.—April 17.
- 7638 James Rooks, 101, High Holborn, London.—Improvements in oil en-
gines.—April 17.
- 7639 George Elwell, 55, Chancery Lane, London.—Improvements in
lifting cranes and hoisting apparatus operated by electrical energy.—
April 16.
- 7643 Arthur Patt-Higgins, 17, St. Ann's Square, Manchester.—Improvements
in mules and twines.—April 17.
- 7648 John Kay, Crown Works, Walter Street, Rochdale.—Improvements in the
construction of condenser bobbins.—April 17.
- 7675 Samuel Watson and John Young, Gasworks, Tunstall.—Improvements in
crossbars and fittings for securing retort lids.—April 17.
- 7682 James Meadowcroft, Penny Bank Chambers, Halifax.—Improvements in
apparatus regulating the outlet of water of condensation from steam
pipes, chests, and the like.—April 17.
- 7687 Francis Ernest Blackmore, 55, Queen's Road, Reading.—Improvements in
rotary field pressure engines.—April 17.
- 7691 Richard Alvin Brent, 70, Wellington Street, Glasgow.—Improvements in
chains.—April 17.
- 7693 William Heywood, 138, Colmore Row, Birmingham.—Improved means
for economising fuel, and consuming smoke in steam boiler and other
furnaces.—April 17.
- 7694 William Koon, 97, Newgate Street, London.—An automatic gravity boiler
feeder.—April 17.
- 7697 George Strong, 72, Chesapeake, London.—A new or improved combined
instand and date indicator, or indicator of other matter.—April 17.
- 7647 Theodor Schmidt and Herman Herkenrath, 37, Chancery Lane, London.—
An improved vice.—April 17.
- 7680 Richard Temmel, 6, Lord Street, Liverpool.—Improvements in the
manufacture of spinning rollers.—April 18.
- 7687 James Baldwin, 18, Southampton Buildings, Chancery Lane, London.—
Improvements in and pertaining to knuckle joints for safety valve
and other levers.—April 18.
- 7692 James Weir, George Weir, and John Ritchie [Richmond, 27, St. Vincent
Street, Glasgow.—Improvements in and connected with water tube
steam boilers.—April 18.
- 7702 George Clement Downing, 8, Quality Court, London.—Improvements in
fire saws.—April 18.
- 7716 Charles Vallat, 65, Chancery Lane, London.—Improvements in gas en-
gines.—April 18.
- 7721 Gottfried Meyer, 46, Lincoln's Inn Fields, London.—Improvements in
carding engines.—April 18.

SPECIFICATIONS PUBLISHED.

8854, Parson, steam turbines and wheels, 1893; 9577, Dugdale and Davies,
valves, 1893; 10,387, Goodman, hardening and tempering steel articles; 10,469,
Lisson, steam engine governors 1893; 12,856, Leaker, valves, 1893.

The above specifications published may be had of Messrs. Rayner and Company,
37, Chancery Lane, London, at 10d. each including postage.

CONTRACTS OPEN:

FOR MINE, QUARRY, RAILWAY, AND ENGI-
NEERING WORK, STORES, &c.

* * We shall be obliged by being promptly placed in possession of particulars
regarding contracts open for competition, and of the results of successful
tenders. In the latter case contract prices should be given.

The date given is that by which tenders must be delivered, in nearly all cases further
information can be obtained on application at the addresses given. In applying
for such the name of "The Mining Journal" should be mentioned as the original
source of the information, concerning which further particulars are required.

HOME CONTRACTS.

Sleepers, May 8 (India Office, S.W.).—The Secretary of State for India in
Council is prepared to receive tenders to supply steel sleepers. Conditions of
contract may be obtained on application to the Director-General of Stores,
India Office, Whitehall, S.W., and tenders are to be delivered at that office by
2 p.m. on May 8.

Steam Pumps, May 10 (Halifax).—For the supply and erection of steam
pumps, pipes, valves, &c., required for the electric lighting works, for the
Electric Lighting Committee of the Corporation. Plans and specifications may
be seen and forms of tender obtained on application to Mr. T. F. Wilmshurst,
borough electrical engineer, Foundry Street, Halifax.

Pipes, May 12 (Rugby).—For the supply and delivery of cast-iron pipes
varying in size from 2 inches to 7 inches, also special castings, &c., required
for the new waterworks, for the Rugby Local Board. Bills of quantities to be
obtained of Mr. W. H. Radford, C.E., Angel Row, Nottingham.

Pipes, May 15 (Dewsbury).—For the supply of about 258 tons of cast-iron
pipes from 9 inches to 24 inches in diameter, including irregulars, for the
Dewsbury and Heckmondwike Waterworks. Drawings to be seen and speci-
fications obtained on application to Mr. G. H. Hill, C.E., 3, Victoria Street,
Westminster, and Albert Chambers, Albert Square, Manchester.

Railway Construction, May 15 (Elion, Aberdeen).—For the construction of
the Oruden Railway in Aberdeenshire, commencing at the Elion Station on the
company's Buchan line, and terminating at Boddan, which will be nearly 15½
miles in length for the Great North of Scotland Railway Company. An assistant
engineer will be at Elion Station at 10 a.m. on May 1, to accompany intending
contractors over the ground. Plans, sections, and specifications to be seen on
and after 24th inst. at the office of Mr. Patrick M. Barnett, C.E., Waterloo
Station, Aberdeen.

Rails, May 16 (London, E.C.).—For the supply and delivery of steel double-
headed rails, steel bull-headed rails, and steel flat-footed rails, delivered at a
port in this country, and (or) at Calcutta, and for engine turntables, for the
East Indian Railway Company, as per specifications and drawings to be seen at
the company's offices. Tenders to be sent to Mr. A. F. Dunstan, secretary,
Nicholas Lane, London, E.O.

FOREIGN CONTRACT.

Railway Works, May 15 (Cairo).—For the earthwork, masonry, pitching,
buildings, and other works, necessary for the construction of several lines of
railway. Conditions and description of work to be seen during office hours, on
application to Colonel Western, Broadway Chambers, Westminster.

NEW DIAMOND FIELDS IN BORNEO.—Some very important dis-
coveries have recently been made of the existence of gem-bearing
fields in the district of Landak, situated in Dutch Borneo, only three
days' steam from Singapore. The district is declared by experts not
only to contain diamond fields but auriferous. Several gems have
already been taken from the bed of the river under normal circum-
stances, and this has attracted a large number of prospectors. An
English syndicate is in course of formation with a proposed capital
of £250,000 to acquire the mining concessions from the Netherlands
Government.

OUR INQUIRY COLUMN.

TO CORRESPONDENTS.

Correspondents will please take note that all communications will in future
be answered in this column and not through the medium of the post. All
questions and replies should be accompanied by the name and address of
the writer.

REPLIES.

F. C. M.—You can procure gold and silver ore for experimental
purposes (extracting), &c., at Messrs. Johnson and Matthey,
75, Hatton Garden, London, E.C.

INVESTOR.—We can recommend you to invest in the company.

A. B. C.—It appears a good speculation.

QUERY.—We do not think any such claim could be sustained.

W. H.—We cannot give an opinion on either subject.

ANXIOUS.—There is no society of the kind you mention.

SHAREHOLDER.—We would rather not advise you on such a
matter.

BETA.—We do not care to recommend the stock.

DELUDED.—The company has been reconstructed three times. The
prospects are absolutely nil.

N. N.—You cannot be too careful.

CHOSEN.—You have made a wise selection.

CHARLES.—It is impossible to say.

H. E. B.—Birmingham manufacturers test best selected copper
by mixing it with spelter, and subjecting the mixture to certain
experiments, but these and the conditions enacted vary, so that
no uniform definition can be given.

FATAL COLLIERY ACCIDENT.—A fatal accident occurred on
Monday at Thorpe's Collieries, Glass Houghton, near Castleford, in
the West Riding of Yorkshire. A new shaft to the silkstone seam
has been driven 200 yards, there being 350 more to sink, under the
contractors, Messrs. Sutcliffe and Davies, of Durham and Barnsley.
Eleven men were at the bottom, and there was scaffolding, consist-
ing of 600 planks, iron rings and twists, between the men and the
brickwork, which was 10 yards from the bottom. Probably owing
to the bursting of the pit-side or of the breaking of an iron link, the
whole of the scaffolding fell on the men below, and it is extraordinary
that any should have escaped. Two are dead, two are seriously
injured, and seven less seriously injured. The manager, Mr. Water-
house, with the assistance of Mr. Arndel, manager at Wheldale
Colliery, directed the search party, a band of men readily offering
their services. It took five hours to recover the survivors, so great
was the weight of the planking which had stuck fast in the shaft.
Several of the search party were injured, and the contractor, Mr.
Sutcliffe, was knocked down. Those killed are J. Freeman, of
Churchfield, Glass Houghton, unmarried; and William Jones, of
Street, Half Acres, Castleford, who has a wife and three children.

STRAITS TIN.

BY A CORRESPONDENT.

THE production of tin in the Straits Settlements is increasing by leaps and bounds, as will be seen from the following statement of exports thence to Europe and America:—

| | | | |
|--------|----|----|--------------|
| 1887.. | .. | .. | 23,814 tons. |
| 1888.. | .. | .. | 23,900 " |
| 1889.. | .. | .. | 28,421 " |
| 1890.. | .. | .. | 27,389 " |
| 1891.. | .. | .. | 31,616 " |
| 1892.. | .. | .. | 34,349 " |
| 1893.. | .. | .. | 39,944 " |

The average prices paid to the miners in the Straits during the last four years were:—

| | | | |
|--------|----|----|----------------|
| 1890.. | .. | .. | \$554 per ton. |
| 1891.. | .. | .. | \$546 " |
| 1892.. | .. | .. | \$634 " |
| 1893.. | .. | .. | \$634 " |

At the date of our last advice from the Straits (15th March) the London price was £69 per ton, and the price received by the miner for his tin was \$649 per ton. So that, notwithstanding the abnormally low price in London, the Chinese miner in the Straits was actually receiving a higher price than he received within the last four years. Is it any wonder that under these circumstances the production has increased 49 per cent. in the last four years? The figures for 1894 will show a still further increase if the present rate of production is maintained.

How is it that while the Cornish miner is receiving from 25 per cent. to 30 per cent. less for his tin now, the Chinese in the Straits are actually receiving more? The explanation is that the price of silver has fallen. Wages there are now higher, the dollar will still buy the same quantity of rice and dried fish, and the mineowner has not a single fraction more expense in any way, but exchange has fallen to 2s. 0½d. per dollar, and for every £1 that the London merchants pay him, he can now get \$10, whereas a few years ago he only received \$6.

It is generally admitted that were the price of tin in the Straits to fall below \$420 per ton, most mines would become unremunerative, and would be abandoned. At 2s. 0½d. exchange, \$420 per ton in the Straits represent about £46 per ton in London, so that tin must drop £23 per ton before the Straits, exports decrease. But at present it looks as though the price of silver—and that means the rate of exchange—would drop further, and there is not a single indication of any kind that silver will not continue to fall until a shilling dollar is reached. If it goes down to 1s. 9d. the Chinaman will still get his \$420, even if the London price declines to £38 per ton; if it drops to 1s. 6d. the Straits miner can afford to sell in London at £33; with exchange at 1s. 3d. his mine will pay even at £27 per ton, and should 1s. be reached he could sell in London at £22 per ton.

These figures are appalling, and cannot be lightly treated by the capitalists or workers in Cornwall. Any further drop in silver spells ruin to the thousands who depend for their living on tin and tin mining. To them, and to many workers in other British industries, the most vital importance attaches to the value of silver, and every effort should be made to increase its value. England's policy on the silver question alone prevented the establishment of an International Silver League. America and the leading European countries are most anxious to form such a League, but England so far has held aloof. That it will come some day appears as certain as that the sun will rise tomorrow, but what untold misery will have to be endured by workers of every class until it is achieved! Lancashire workers have gained a temporary respite, their products being continued on the free list in India, but their interests must give way before the united voice of the millions of our fellow-subjects in India.

Our coal exports are rapidly dwindling, and in the East, Japanese and Indian coal is rapidly taking the place of Cardiff. It is the same in every branch of industry where Japan, China, India, and the Straits can produce the raw materials. An International Silver Union would at once raise the price of silver, and dollars would jump above 4s. probably, and then what would happen?

At 4s. exchange, tin at £65 per ton in London would return the Straits miner only \$308, against a first cost of \$420, or a clear loss of \$112 per ton. At 4s. exchange, Straits tin could not be produced under £87 per ton in London, and tin would to a certainty advance to that extent. Moreover the Straits miners would not sell at bare cost for long, so that the price would naturally go above £87 per ton.

Besides the immediate effect on prices the opening up of new mines would cease, and many mines which return handsome profits at \$649 per ton must close, if only \$420 could be obtained for their tin.

To every thoughtful person, the immediate settlement of the silver question must now appear no mere academic question, or as having no interest to an Englishman with his fixed standard of value, but it must become the most vital and pressing consideration of the hour. Since England became a nation her commerce—nay, her very being—has never been so seriously threatened as it is at the present moment, and it behoves every man to be up and doing.

No half measures will suffice if silver is not reinstated in the position it so steadily maintained—in spite of England's action, until it was abandoned by France and Germany, then Britain will no longer be the workshop of the world, and the scene of action will be transferred to Japan, China, and India, where millions of workmen are contented and happy on an average of \$6 to \$8 per month. To-day that is equivalent to 12s. to 16s. per month. What it may mean a month hence if action is not taken no one can foretell.

STEEL DIRECT FROM IRON ORE.—A process of operating a blast furnace for rapidly making steel directly from impure ore and steel has been patented by Mr. J. T. Walnwright, a metallurgical engineer of Chicago. This process has been designed, he states, to eliminate sulphur and phosphorus during the smelting operation, and exclude from the metallic product silicon and other metalloids except carbon. He claims that his method combines desirable features of the blast furnace and open hearth, while dispensing with some undesirable features common to both. For operating this process a shaft furnace of moderate size may be constructed by remodelling an ordinary cupola. This furnace is not operated by a continuous process, but intermittent heats are made, and the furnace is recharged for each heat. When commencing with an empty furnace, the contracted portion of the shaft is bridged over with an open mass of coke, charcoal or coal, and on top of this the shaft is charged with a mixture of ore, flux and solid carbonaceous fuel, which may be of a different and cheaper grade than that charged with the ore. A blast of air is then admitted through the blast pipe, and the top of the fuel ignited. By igniting the top of the fuel and confining the blast, it is claimed that the gases increase in temperature, and upon the length of the consumed fuel column depends the final temperature attained.—*Invention.*

THE MINERAL WEALTH OF HUELVA.

Being an Illustrated Article on the History of this District from the earliest times.

[Specially written for *The Mining Journal*.]

XI.

(Concluded from page 457.)

DURING the following century, with one or two exceptions, these mines called for no attention, and for practical purposes they were again relegated to the realms of oblivion. However, it may be interesting to relate that, about the middle of the 17th century, a concession was granted in favour of a certain Alvaro Aloano, allowing him to utilise the waters, whence springs the Rio Tinto, in such a way that the iron placed in them may be converted into copper.

At the beginning of the 18th century (1719) a Swede named Liebert Wolters had made certain contracts with the Spanish Government for the raising of sunken treasures in Vigo Bay, and probably through the connections thus established in the Government offices he heard of the rich mining properties supposed to exist in the western extremity of the Sierra Morena. At any rate, whatever be the way in which he acquired this knowledge, it is certain that Wolters made a proposal for leasing during 30 years the mines of Rio Tinto, Guadalcanal, Cazalla, Arocena, and Gelarosa in practically the same terms as one which had already been made in May, 1719, by other parties, for working the same mines. This proposal was accepted by the King in June, 1725, and about the end of the same year Wolters took possession of the Rio Tinto Mines, hoping to work copper there in the following March.

In September, 1725, he issued a circular or prospectus soliciting subscriptions for shares in a company which he was forming for the working of his recently acquired concession. This enterprise being completely successful, the company was only formed, but great differences of opinion arose amongst its manager or directors as to the way of conducting its affairs. Finally, these were settled in a most extraordinary manner by a royal decree ceding the mines of Rio Tinto and Arocena exclusively to Wolters and the others to the company. Wolters had probably formed his own opinion as to the relative values of the properties in question, and had, no doubt, arranged for this solution, which, unfortunately, he only survived by a few days, leaving as his heir a nephew named Tiquet.

After a little trouble Tiquet's rights were fully recognised, a royal mandate being sent in November, 1727, to the municipal authorities of Lalamea ordering them to put him in possession of the mines of Rio Tinto.

From this date till 1742 Rio Tinto is scarcely to be traced, but in this latter year, Mary Herbert, an English woman of good birth, who, after the death of Wolters, had contracted the opening of an adit level at the Guadalcanal Mine, now belonging solely to the company, obtained a warrant placing her in possession of the Rio Tinto for indebtedness on the part of the company; and she caused to have destroyed a building which Tiquet was raising for the manufacture of sulphates of iron and copper, but finally, after costly and prolonged legal proceedings, she was justly displaced in 1746.

These vexatious proceedings must have materially disturbed the course schemed out for the working of the mines, and naturally Tiquet took advantage of the favourable settlement to petition for an extension of his concession. The petition was favourably considered, the duration of his lease being prolonged for 30 years, counting from 1746.

The document granting this extension, although referring chiefly to the manufacture of sulphates of iron and copper, contains distinct allusions to the smelting of ores; so that this period may be taken as the one in which the regular working of a genuine pyrites mass in the Huelva district was restarted in modern times. Its mines had been dead for 13 centuries.

The exact date at which the ore was struck cannot be deduced with certainty, but there are strong reasons for fixing either 1736 or 1737 as the year in question, for in the latter of these Tiquet commenced sending copper to the mint at Seville. It may be argued that this copper proceeded from the cementation of the suppureous waters draining out of the mines; but as cementation was not carried on until 1752 this contention falls to the ground.

Having established this point it would only be further necessary for a strictly historical notice to mention that the district has been kept open as a mining centre ever since; but its importance is so great that a few words may safely be added, mentioning very shortly the chief events of its subsequent development.

Great difficulties continued to be experienced in finding out the proper system to be adopted for smelting the ores produced from the Rio Tinto Mine, and it is probable that the year 1750 was reached before this technicality was completely understood.

In 1758 Tiquet died, leaving in charge of the establishment an ex-tailor of Valencia, called Sanz, who showed such undoubted skill that the produce from the mine augmented considerably under his own management.

In due course the Government entered into possession on the expiring of Tiquet's lease, and continued working with increased vigour until the unsettled state of Spain, resulting from the Napoleonic disturbances at the beginning of this century, caused such irregularities in the working that the establishment gradually dwindled down, and finally came to a complete standstill during the latter years of the Peninsular war, the mine not being worked again until 1825.

In 1829 the Government once more determined to lease the Rio Tinto Mines, and from that time down to their sale in 1873 to the company now owning them they served sometimes as the prey of inflated contractors and sometimes as a field for the exercise of the abilities of unscrupulous employees.

About the year 1840 great activity commenced in the registering of mining claims all over the Huelva district, so much so that not a rock, slag heap, or old working escaped the observation of the then prospectors—in fact, concessions were granted between the years 1840 and 1848 for absolutely all the mines now worked or known. Notwithstanding this feverish burst of mining zeal very few of the concessions were really worked, and nearly all were eventually abandoned.

However, a few pyrites mines were opened up and made to produce regularly, so at the middle of this century it could safely be said that mining operations were not exclusively confined to Rio Tinto.

Incidentally it may here be mentioned that eight years subsequently—that is, in 1858—the first manganese mines were opened up in the district of Huelva.

The year 1853 had brought to Huelva a French engineer, M. Ernest Deliquy, whose connection with the district was destined to be of the closest. He instinctively grasped the value of its mineral wealth, and by the help of French capitalists was able not only to register concessions for all the mines which we have already referred to as having been abandoned a few years before, but also to obtain a number in Portugal, including amongst

these the celebrated mine of Santo Domingo, subsequently leased out to Mr. James Mason.

From this time forward down to the present day the products of these mines have so largely supplied the European copper and chemical trades with raw materials that it may be asserted, without fear of contradiction, that a stoppage at the present moment would cause a serious panic in the centres where these trades are carried on. This fact connected with the enormous amount of capital spent remuneratively in a district, which probably at one period or another had already been in exploitation for over 1000 years, gives it a singular record in the history of mining enterprise, and one without, perhaps, a parallel elsewhere in the world.

It has been pointed out that M. Deliquy was the person who first realised the true value of this district, but it must be mentioned that the perseverance of Mr. Mason in pushing on the manufacture of sulphuric acid from pyrites enabled the expansion of its market to the enormous proportions which it has now reached. It has been said of M. Deliquy that he discovered nothing really new, and of Mr. Mason that his efforts to upset the old sulphuric acid trade were greatly assisted by an extra tax put on Sicilian sulphur during the expiring years of the Neapolitan Kingdom; but, be this as it may, the broad fact remains that these individualities, each in its way, did for Huelva in this century what Wolters and Tiquet did for it in the last, and, owing to them its mining industry, it is again what it was 1500 years ago.

MINERALS AND MINING IN TASMANIA.*

By Mr. A. P. WILSON.

TASMANIA has not hitherto occupied a prominent place as a metal-producing country, but many mining engineers and geologists (by whom it has been recently visited) report as to its mineral wealth. At the present time it contains one developed mine of world-wide fame—the enormously rich Bischoff Tin Mine; and it is not improbable that the Zeehan and Dundas silver-lead fields will attain similar prominence.

The Beaconsfield Gold Mine has a reputation second only to Mount Morgan in Australia. Besides gold, tin, silver, and lead, other minerals, such as copper and bismuth, coal and iron, marble and slate, are found, and worked to a limited extent.

The Mount Zeehan field covers an area of about 140 square miles, covered by a network of galena lodes. The mineral occurs generally as a bright close-grained galena, and some of the lodes have been traced for a length of more than ½ mile. Generally, the lodes are free from deleterious minerals, with the exception of small quantities of zinc-blende and sulphide of antimony. The physical structure of the galena, though generally presenting a small close-grained fracture, is frequently somewhat coarse-grained, but it never presents the large cubical pieces found elsewhere. The coarse-grained variety is frequently iridescent, not unlike peacock copper ore. The average result of many assays showed 60 per cent. of lead and 65 ounces to 110 ounces of silver per ton. The mines are now connected with Port Strahan by means of a 3½ feet narrow-gauge railway, built by the Government at a cost of about £200,000.

Coal is found at several places in the colony; more especially at Mount Nicholas, Sandfly, and Jerusalem. It has nowhere been worked at any considerable depth, and is unfortunately much faulted.

Bismuth is found at Mount Ramsay, and nickel at Heazelwood. Sapphires, garnets, zircons, topazes, and other precious stones are also found.

Generally, it may be said that the mineral resources of Tasmania show that it is bountifully endowed with great varieties and abundance of mineral wealth, and that her future prosperity depends on the store of minerals rather than on agricultural, pastoral, or similar pursuits.

* From a paper recently read before the North of England Institute of Mining and Mechanical Engineers.

THE DIAMOND DRILL.—The diamond drill, under the superintendence of Mr. J. T. Cole, is making most satisfactory progress in its mission of exploitation into the bowels of the earth, says the *North Queensland Register*. A depth of 504 feet has now been attained, and if the present average of 70 feet the fortnight can be maintained, it will not be long before 1000 feet are registered. The trial of the drill here is due to the enterprise of the Golden Gate Gold Mining Company (Limited), it is generally understood, acting on the advice of Mr. E. H. T. Plant, and if through its agency the presence of payable reefs is once more demonstrated in that portion of the field, one more debt of gratitude will be due to Mr. Plant's enterprising spirit by Charters Towers. The ground being tested is a new lease the company acquired, lying to the south west of the old property. The diamonds used are carbons or black diamonds in contradistinction to boris, the glittering gems of the gay world. These have to be changed every 5 or 6 feet, as the face becomes smooth by contact with the hard rock, and so will not bite—i.e., do its work. Like other diamonds, the carbons frequently have flaws, and are then useless. Mr. Cole is obtaining some diamonds from the Bingera Mines, in New South Wales. Should they prove suitable, it will enable the drill to go double the distance it now does without requiring a change, and about twice the present boring will be done in the time. It is the time lost in renewing the bits which is such a bar to greater progress. The experiment with these stones will be watched with the keenest interest, as success will mean the establishing of a market for them immediately. With the exception of about one foot of calc-spar, passed at 322 feet, the ground traversed has been hard granite—country rock. The cores taken out range from 5½ feet down to a few inches in length, and every piece is marked with the depth as it is removed from the core barrel and stored, thus a reliable record of every foot of ground traversed is kept. The diameter of the core taken out is 2½ inches. The diamonds are kept cool and the debris, which comes out like tailings from a mill, is removed by a stream of water forced down the rod tubes by a force pump. So far as Queensland is concerned, the Diamond drill has been of little or no service where tried—Gympie and Croydon. In Victoria, on the other hand, the famous Madame Berry alluvial lead was picked up by its instrumentality at a depth in the first instance of something under 500 feet, the lead being subsequently traced for about 20 miles, and is one of the most famous in the world. The dividends from the Madame Berry Mine alone now total nearly a million. There are 14 or 15 Diamond drills working three shifts in Victoria at the present time, but almost entirely boring for coal and deep alluvial. In Victoria the reefs are, generally speaking, nearly perpendicular, and so downright boring would be almost ineffective, but for cross cutting a smaller sized drill is used with good results. The one here is known as the Giant drill, and was made under Mr. Cole's superintendence by Messrs. Scott and Young, of Melbourne, for the Queensland Government for use on Gympie, where two bores were put down, the first to a depth of 630 feet, and No. 2 finished at 2036 feet. The Giant is capable of boring to a depth of 4000 feet.

\$5000 BONUS would not be thought too large an amount to pay for the blessing of health by many wretched sufferers who by day and night are tortured with the racking pains peculiar to gout and rheumatism. Relief, however, can be procured at a much less cost by the aid of Holloway's Pills and Ointment. The former are of so purifying a nature that a few doses taken in time are an effectual preventive against an attack of either. The Ointment should be thoroughly rubbed into the parts affected at least twice a day after they have been sufficiently fomented with warm water, which opens the pores and facilitates the introduction of the Ointment to the glands.

SPECIAL CORRESPONDENCE : COLONIAL AND FOREIGN.

OUR PARIS LETTER.

Position of Copper.—Better tone of Gold Mining
Scrip.—Gold Imports.—Hungarian Coal Mines.
—Ironstone Mining.—Activity in
Nickel Production.

WITH the municipal loan of eight millions sterling subscribed for no less than 85 times, it is evident that France possesses a very powerful element of industrial activity, if only it were turned to proper account. Unfortunately, the small holders have not the slightest idea or inclination of placing the vast reserve of money that is now lying unproductive in enterprises that would benefit themselves and the industries of the country at the same time. If any money is to be attracted into foreign mining it will have to be subscribed by capitalists who occupy themselves chiefly with this class of investment, and the majority of these only act upon industry in an indirect way by taking up mining scrip as a speculation. During the past fortnight they have been dealing in a very uncertain manner with copper mining scrip, both Rio and Tharsis shares having undergone rapid fluctuations. Holders of copper stocks are no longer able to influence the market as they did formerly. The position is too precarious to induce them to lay in supplies, and as consumers have been for the most part satisfying their requirements out of stock, these are probably lower now than they have been at any time since the collapse of the copper syndicate. Such a depletion of the metal reserve of course does much to clear the immediate outlook, and prepares the market for any improvement that may take place abroad.

South African gold mining scrip is showing a good deal of firmness, and owners, as a rule, are not disposed to sell. There is, indeed, very little speculation, as this kind of scrip is beginning to be looked upon more in the light of a safe and profitable investment. The main body of investors are, however, still too timid to place their money out of the country, and are content for the moment to see others reap the benefit of a well-placed confidence. Robinson and De Beers are particularly in good demand, and the latter is rapidly moving upward. Outside of South Africa it cannot be said that the French are especially happy in their gold mining enterprises. Repeated attempts have been made to evoke enthusiasm in the auriferous resources of French Guiana, which are said to be quite as rich as those of the neighbouring British and Dutch colonies. So far, all efforts to develop them have been hindered by bad management, to say nothing of the difficulties of transport, which make the mines almost inaccessible. Nevertheless, engineers who have been to French Guiana are of opinion that the industry could be made a very profitable one. Rather less success than has attended the companies in Guiana has been the lot of the Mines d'Or de l'Uruguay, which for two or three years past has been in very low water. The company was declared by the native tribunals to be in bankruptcy, much to the disappointment of the shareholders, who think that they cannot do better than continue carrying on the concern under improved management. Three of the administrators went to Uruguay a few months ago with a view of getting the verdict withdrawn. While there a split took place between the three, and two of them continued the negotiations on behalf of the company, though it is not yet known whether they are likely to be successful.

The imports of gold into France continue to increase, while very little of the precious metal is leaving the country. The economic results of this accumulation of gold are too obvious to be insisted upon. During the first three months of the year the value imported was £1,468,837, as compared with £1,466,013 in the corresponding quarter of 1893. The exports of gold in the same period were valued at £581,874, as against £1,115,422 last year.

Allusion was made a fortnight ago to the amount of French capital invested in the Hungarian coal mines. This may be supplemented by a reference to the Urikany Company, for which the capital was subscribed in Paris about a couple of years ago. The concern is in possession of an excellent property, which is now being developed very rapidly. During 1892 it was able to realise a profit of about 60,000 florins, notwithstanding the fact that the enterprise was only in its initial stage. Since then the output of coal has been doubled, so there is every prospect that for the year 1893-4 the profits will have reached to something like 100,000 florins. This would enable the directors for the first time to declare a dividend of 2½ per cent. It is proposed, however, to make a large expenditure with a view of increasing the capacity of output, so that before very long the production may be quadrupled. The consumption of fuel in Hungary is increasing so rapidly that the company is always assured of a profitable home market.

Shareholders in ironstone mining concerns find that the position of the industry last year was not so satisfactory as in the preceding twelve months, and most of them are obliged to content themselves with a smaller dividend. This unsatisfactory result was due in the first place to the quietude of trade, but more directly to the miners' strike in England, which compelled blast-furnace proprietors to postpone taking supplies. The consequence was that a vast quantity of ironstone accumulated at the mines. As, however, most of this mineral is sold forward, and is only awaiting delivery, it will not be long before the mines are again fully at work. If the past year has been very quiet in ironstone mining the present year promises to be an exceptionally busy one. With the lighting of new furnaces in France, Germany, and Belgium, in consequence of the steady demand for crude metal, the consumption of ironstone should very largely increase. During the past three months the imports of mineral were valued at £816,720, as compared with £568,080 in the corresponding period of 1893. At the same time the imports of coal increased from £1,578,200 to £1,647,080.

Capitalists are being sought to take up more actively the work of developing the nickel deposits of New Caledonia. It is thought that there is money in this enterprise if only it can be conducted upon economical lines. New Caledonia is already the chief producer of nickel, as it has been during the past eighteen years, but it finds itself now face to face with the growing competition of Canada, where the nickeliferous pyrotines of Sudbury are treated in a way which permits of the metal being placed upon the market at a very low price. The French companies in New Caledonia are trying to uphold their position by attracting more capital into the industry, and by laying down new plant for the treatment of the ore to produce it at a price lower than that of the Sudbury nickel. They consider that they have a special advantage in being near to the seaboard. If they succeed in cutting out the Canadian metal it is certain that the industry will become a very profitable one, as the scope for the consumption of the metal for industrial purposes is practically without limit.

THE BENNETT AMALGAMATOR.

By Mr. BRENTON SYMONS, M.I.C.E., M.E.

THE continuous depreciation of silver has been somewhat bewildering to those countries that, possessing little gold, have had from the earliest times a silver currency. The occidental world has particularly suffered, and has fallen a prey to the most acute anxiety for the future. It is no exaggeration to say that it may so affect the Spanish-speaking republics as to render it difficult, if not impossible, for them to pay interest on the national debts they have incurred in countries where gold is the standard metal. The rapid fall inspired with panic the silver kings of the United States, who found themselves compelled to suddenly shut down their mines and sacrifice the immense sums expended in machinery, plant, &c. Owing to the commercial sympathy existing between the United States and Mexico, the crisis in the latter country was so acute that buyers of silver ores refused absolutely to purchase on any terms, with the result that many mines which were profitably worked found themselves disused. A partial recovery soon set in, and silver ores are again marketable, but mines once shut down are not easily set going again, and in view of the present uncertainty as to the future of silver, the Mexican public (seldom good speculators) are disinclined to undergo the trouble and expense. Thus explains itself the reason why in travelling through the mineral districts we find, in the charge of caretakers, mines which, with a small outlay of capital and energy, would soon become dividend properties. It is evident enough that the present high exchange, combined with the indisposition of the owners to work their mines under disheartening conditions, gives the foreign capitalist the opportunity to purchase Mexican properties much below their intrinsic value. It will take an interval more or less long for the mining element to recover and recuperate from the benumbing influence of the shock to their faith in silver, but it is in any case only a question of time, and mineral rights will gradually rise in value. Really, a silver dollar is still a dollar, and its purchasing power for home products is just the same as before the crisis; it is the imported goods which have increased in value, and the people have resolved to have as little foreign trade as is possible.

It is generally admitted that nine-tenths of the gold now existent in the shape of coin, plate, jewellery, &c., has been accumulated from placers, comparatively little having been extracted from veins previous to the discovery about the year 1850 of the auriferous regions of Australia and California. The mining of the precious metal from veins is tedious, and many years must elapse—even if rich veins were opened—before gold in quantity sufficient to affect its relative value as against that of silver could be placed in circulation. Nature has during countless centuries been incessantly employed in eroding the auriferous rocks of the mountainous regions, and spreading them over the lowlands in the shape of sand and gravel, with the gold nearest the bedrock, so that the gold segregated from thousands of feet of strata now lies waiting to be garnered by the hand of man. Nothing can be of value that does not call for industry and intelligence, and there exist some natural obstacles which oppose the easy possession of this gift of nature's stamps. A formidable one is the difficulty of disposing of the mountains of debris carried by the rivers on to the fertile banks populated by the irrepresive agriculturists, who have successively contested the right of the placer companies to overwhelm the land that they with so much labour have changed to corn fields. Again, in the more southern states, and in Northern Mexico, where the deposition of the washed debris would meet with no complaints, the dryness of the climate supplies no water to free the gravel from its auriferous wealth. Notwithstanding this objection—which at first sight seems insuperable—active and persistent search for placers have for many months been continued over these countries, and numerous valuable deposits have been discovered in the broad, arid, and sparsely settled belt crossing the Continent from Texas to the Pacific, both in American and Mexican territory. The lack of water has been surmounted by the invention and introduction of numerous machines which are more or less capable of treating the gravel and sand dry, some of which have given very fair results, but without collecting the flour gold. Hundred of these machines are in operation in the dry diggings scattered over the States of New Mexico, Sonora, Arizona, and Lower California, giving lucrative employment to a proportion of the workmen compelled to idleness by the stoppage of the silver mills. These States possess geologically and physically many characters in common, and the flora and fauna have also a great similarity—cacti of various sorts being always *en evidence*, while the miniature trees have their crooked branches thickly garnished with prickles, causing anguish to those who have to ride through the chaparral.

In Lower California a range of granitic mountains has suffered extensive denudation, and the debris strewed over vast plains called mesas, the strata of which dip gently from the gulf side, where the highlands reach 2000 feet, to the low shores of the Pacific. These gravelly and sandy beds surround the mountain chains, and extend up the valleys, so that the old sea bluffs or capes are still to be recognised. Though at present only visible in comparatively small patches, the granite was evidently overlaid by gneiss or highly metamorphic beds, which must have contained gold, because such isolated portions still yield the precious metal to the rivers during the short and heavy rains which in some years occur, and which is sufficient to afford profitable employment to the rancheros during the brief period of running water. Some portions of the immense mesas which stretch 1000 miles along the length of the Californian peninsula are distinctly gold bearing, and these are often found in the vicinity of low hills of metamorphic rock which occasionally protrude through the sand and gravel of the sedimentary strata. Such districts have been worked for many years during the rare seasons in which water was obtainable, obviously in a feeble and desultory manner. The advent of cheap and tolerably effective machines has intensified the search for alluvial gold, and now quite a number of them are engaged in its collection, not only in the valleys descending from the mountains, but also far out on the arid plains where water and food are obtained with much difficulty. Of course the machines must possess qualifications corresponding to the conditions under which they have to be worked, and to the means of those engaged in the pursuit; thus cheapness, simplicity, and lightness are paramount factors, so that they can be easily transported by manual labour, and any repairs executed on the spot. The simplest and, under the circumstances, the most effective is a sloping table of stout cloth provided with four or five rifles resting on a box, to which is attached a sort of bellows that forces through pulsating puffs of wind sufficiently strong to lift the sand over the rifles, but leaving the grains of gold. The strength can be accurately adjusted to suit the class of debris treated, and a small machine with an inclined plane 3 feet long by 2 feet wide can treat 5 to 6 tons daily, with one man blowing and another feeding, whilst to remove the boulders, and prepare the sand by sifting, may require two to four labourers extra, according to the nature of the pay-dirt. The washers have been able to earn from \$4 to \$2 per diem, and occasionally much more. These machines cost only from \$30 to \$40, and can be transported by two men for long distances, being carried like a sedan chair.

(To be continued.)

The LIST OPENED on THURSDAY, the 3rd inst., and CLOSES this day, SATURDAY, the 5th inst., for both Town and Country.

The WEST AUSTRALIAN GOLD FIELDS, Limited, INVITE SUBSCRIPTIONS for 40,000 SHARES in MAWSON'S "REWARD" CLAIM, Limited, at 5s. PREMIUM.

MAWSON'S "REWARD" CLAIM, LIMITED, DUNDAS GOLD FIELDS, WESTERN AUSTRALIA.

CAPITAL £80,000, in 80,000 Shares of £1 each. Of which 40,000 are now offered for public Subscription at 5s. per Share premium. The Shares will be payable—5s. on application (which will be appropriated to the above premium), 5s. on allotment, and the balance, as required, in three Calls of 5s., at intervals of not less than three months.

DIRECTORS.

F. A. Thompson, Esq., Chairman South Simmer and Jack Deep Level G. M. Co., Limited.
R. Herbert Lapage, M.I.C.E., Director Hampton Lands and Railway Syndicate, Limited.
E. A. Preston, Esq., Director African and Australian Gold Recovery Companies.
G. F. Tavernor, Esq., Chairman Gold Fields of Mozambique, Limited.
H. J. Saunders, Esq., Perth, Western Australia, Director West Australian Gold Fields, Limited.
LOCAL DIRECTORS IN WESTERN AUSTRALIA.
Arthur Austin, Esq., Albany and Dundas Hills.
Lord Percy Douglas, Coolgardie.

BANKERS.

Messrs. Prescott, Dimsdale, Cave, Tagwell and Co., Limited, 50, Cornhill, E.C.
British Linen Company Bank, Edinburgh and Branches in Scotland, and 41, Lombard-street, London, E.C.

SOLICITORS.

Messrs. Burn & Berridge, 11, Old Broad-street, London, E.C.
CONSULTING ENGINEERS.
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Edinburgh.—Messrs. Hardie & Turnbull, 42, George-street.
Glasgow.—James Kirkwood, Esq., 7, Royal Bank-place.

MANAGER AND SECRETARY.

Allen H. P. Stoneham (Messrs. Monkhouse, Goddard & Co.).

OFFICES.

28 and 29, St. Swithin's-lane, London, E.C.

ABRIDGED PROSPECTUS.

This Company has been formed to acquire—
(a.) Mawson's "Reward" Claim, which has been granted by the Government of Western Australia as a reward for Messrs. Mawson and Kirkpatrick's discovery of a payable gold field at Dundas, in the same manner as Bayley's "Reward" Claim was granted by the same Government for Messrs. Bayley and Ford's discovery of a payable gold field at Coolgardie.

(b.) The lease of about twenty acres of land outside and around the said "Reward" Claim, being a continuation of the reef both north and south.

The whole claim, locally known as the "May Bell," and amounting to about 26½ acres, is to be acquired by this Company.

The Dundas Gold Field is the latest discovered gold field in Western Australia, having been proclaimed a public gold field in August, 1893. Mawson's "Reward" Claim is situated about a hundred miles south of Coolgardie, and about the same distance from the coast at Esperance Bay.

The claim has been examined and reported on in Western Australia—for the Government by Mr. H. P. Woodward, the Government Geologist; and for the Owners by Mr. E. H. Becke, Metallurgist, Perth, and Mr. W. H. Angove, A.M.I.C.E., F.R.G.S., Albany.

The following are extracts from the official report of the Government Geologist on the claim:—"The main shaft at the south end of the claim is forty feet in depth, showing a well defined reef four feet in width, carrying gold all the way down. It underlies slightly to the west, and shows all the characters of a true fissure vein. Fine gold is carried all through the stone, besides which there are very rich patches, but in those also the gold is in the solid stone. A few chains north of this shaft is another, which is down about ten feet, in which there is a very solid body of stone about five feet in width, having, if anything, even a better definition than in the main shaft."

The following are extracts from the report of Mr. E. H. Becke:—"I may add that there are few reefs in the Colony equal to Mawson's. I consider Mawson's equal to any mine—in fact, second to none in the Coolgardie field, Bayley's excepted."

The following are extracts from the report of Mr. W. H. Angove:—"The reef is a solid body of stone all the way down, and is quite four feet wide, carrying gold all through the stone. I have had many years of experience on different fields in Victoria, and have no hesitation in saying that the 'Maybell' reef of Mawson and Kirkpatrick's is one of the best defined in the Colonies, and excepting the celebrated 'Bayley's Find' there is nothing in Western Australia equal to it. Everywhere on the reef where it has been opened out gold is freely showing."

WATER AND TIMBER.

Mr. Becke and Mr. Angove confirm the Government Geologist's statement as to their being plenty of water and timber, the former stating that a permanent supply of water could be obtained to keep fifty heads of stamps going day and night.

TRANSIT.

Both Mr. Becke and Mr. Angove agree that there will be no difficulty in getting machinery to the mine, there being a good road from the coast at Esperance Bay, which is a port of call.

Sir Malcolm Fraser, K.C.M.G., the Agent-General for Western Australia, writing to the *Daily Telegraph* on the 2nd April, in reference to the gold from Bayley's Reward Claim, now being exhibited in London, says:—"The same formation has already been found at different points on a zone, which it is believed extends from the Dundas Hills."

The Directors refrain from putting forward any estimate as to future profits, preferring to rely on the statements of the above extracts in the reports; they express their confidence in the Company's property soon yielding large returns to the Shareholders. The full reports, together with samples of the ore, can be seen at the Offices of the Company.

PURCHASE PRICE.

The price to be paid for the property has been fixed by the Hampton Purchase Syndicate, Limited, who are the vendors and the promoters of the Company, at £40,000, payable as to £5000 in cash, as to £15,000 in cash or shares (as mentioned in the purchase contract hereafter referred to), and as to £20,000 in fully-paid shares. For Contracts see full prospectus.

Prospectuses and forms of application may be obtained of the Bankers, Solicitors, and Brokers, or at the Offices of the Company. London, 26th April, 1894.

APPLICATION FORM.

MAWSON'S "REWARD" CLAIM, LIMITED.

To the Directors,
I enclose cheque for £ and apply for shares, at 5s. per share premium, upon the terms of prospectus, dated 26th April, 1894. I agree to waive any fuller compliance with section 33 of the Companies Act, 1867, than as contained in the said prospectus.

Name (in full).....
Address.....

REVIEWS.

MECHANICS BY A WORLD-REPUTED SCIENTIST.

The Science of Mechanics: a critical and historical exposition of its principles, by Dr. Ernst Mach, Professor of Physics at the University of Prague, translated from the second German edition by Thomas J. McCormack. (The Open Court Publishing Company, 324, Dearborn Street, Chicago.)

Mr. J. McCormack, by his effective translation, where translation was no light task, of this masterly treatise upon the earliest and most fundamental of the sciences, has rendered no slight service to the English speaking student. The German and English languages are generally accounted second to none in their value as instruments for the expression of scientific thought; but the conversion bodily of an abstruse work from one into the other, so as to preserve all the meaning and spirit of the original, and to set it easily and naturally into its new form, is a task of the greatest difficulty, and when performed so well as in the present instance, merits great commendation. Dr. Mach has created for his own works the severest possible standard of judgment. To expect no more from the books of such a master than from the elementary productions of an ordinary teacher in the science would be an undue moderation. The most rigorous criticism, the most exacting canons are fittingly applied to the work of a man who would take a high place in a World's Academy of Science. Dr. Mach has here given us no text book to supply the student with definitions and formulae. Those who are "sweating" for the lower examinations—even those reading to matriculate at Burlington House—will do well to hold by Newth, Magnus, and Aveling, and to reserve for a subsequent close and interested perusal a work as yet somewhat beyond their course. Our author has lifted what, to many of us, was at one time a course of seemingly unprofitable mental gymnastics, encompassed only at vast expenditure of intellectual effort, into a study possessing a deep philosophical value and instinct with life and interest. "No profit grows where is no pleasure taken," and the emancipated collegian will turn with pleasure from the narrow methods of the text book to where the science is made to illustrate, by a treatment at once broad and deep, the fundamental connection between all the physical sciences, taken together. It is not without valuable results that the author has everywhere subordinated his narratives of demonstration and experiment to a clear and vivid exposition of the laws they illustrate, and has infused into his work much of the interest invariably attaching to the biographies of great originators in scientific thought. The observance, moreover, of the historical style, necessarily implied in this, is the way in which, more forcibly than in any other, the idea of the science as an evolution of the mind, and as a harmonious whole can be conveyed. Dr. Mach has devoted his first two chapters to a full, comprehensive account of the development of the principles of statics and dynamics, while in the succeeding chapters he extends and applies them. To the conveyance of knowledge piecemeal, and without any intelligent appreciation of its relation to other and deeper branches, Dr. Mach has a just and strong objection. One chapter in the end of the book is occupied by a description of the relation of mechanics to the other sciences, and without it the work would evidently be very incomplete. The writer has very clear views of how scientific instruction should proceed, and these he develops as occasion offers from chapter to chapter. Dr. Mach has, in fact, so constantly before him an exalted idea of science as science, and of mechanics as one of its most fundamental branches, that he is at every point stepping aside to thrust with no uncertain aim at the writers of modern text books, and at their modes of treatment and inculcation. "The mania for demonstration in science," he says, in an aside which will be read by many with a delighted assent, "results in a rigour that is false and mistaken." His remarks in this connection are so just, and at the same time so much needed, that there is no ground for complaint against the impulse which has led him into mildly polemical paths. Dr. Mach has not altogether escaped the temptation peculiar to scientific writers to commence a treatise with a platitude or two. But for its second word, boldly thrown into italics, the sentence commencing the third paragraph of the introduction would appear to us merely an elaborate truism. "An instinctive, irreflexive knowledge of the processes of Nature will doubtless always precede the scientific, conscious apprehension, or investigation, of phenomena." By the use of the word "instinctive," Dr. Mach has gone serenely into the domain of metaphysics, where, with a calm conscience, we may leave him to the tender mercies of the fiercest set of wranglers in the intellectual world. The word "instinctive" appears to us incorrect in its application to knowledge, which we have generally supposed to be so acutely acquired from without. That the difficulty of finding parallel words must have baffled the translator in rendering these sentences must not, however, be forgotten, and it is sufficient here to point out that the sentence is removed from all imputation of having been hurriedly written by its supplement—"The acquisition of the most elementary truth does not devolve upon the individual alone; it is pre-effected in the development of the race." Having said so much, it is a fitting conclusion to recommend the work to all students following mechanics seriously, and with a purpose. No work of Dr. Mach's could have issued from the Press for a fortnight, and remain unknown to any considerable section of students in physics. Those, however, who may not happen to have added it to their book shelves should repair the omission without delay.

A NEW DICTIONARY.

The Royal English Dictionary and Word Treasury. By Thomas T. MacLagan, M.A. (London: T. Nelson and Sons, 35, Paternoster-row, E.C.) Price 2s. 6d.

One would scarcely think there was room at the present moment for a new dictionary of the English language. Indeed, there are so many of them that the best are sold for a comparatively low price. And still they come! Nor would we think that any inventive mind could strike out an original path in this phase of literature, so completely do our requirements seem to have been met. Yet here we have an instance of it, which is so simple, indeed, and yet so useful, that we wonder the idea has not been conceived hitherto. The object of this new book is to give the derivation and the source of each word; its pronunciation, and its definitions and meanings in simple terms, so that a child might understand, followed by a list of similar or synonymous words. It, in fact, is a combination of two books—a dictionary and a book of synonyms—and, in the words of the author, not only constitutes a literary help, but materially assists in the understanding of the word sought. Its one drawback is its smallness and its elementary simplicity, but as these were the objects which the author sought to accomplish we cannot find fault with him. In the task which he has set himself he has admirably succeeded, and no doubt that is all the praise he seeks. Besides the dictionary proper, there is an appendix containing words, phrases, and noteworthy sayings from the Latin, Greek, and modern languages; abbreviations in common use; prefixes and affixes; and a list of geographical roots, with meanings.

MEETINGS OF MINING COMPANIES.

WEST KITTY MINE COMPANY.

A satisfactory state of finances, and a cautious but vigorous policy.—Developments far ahead of present requirements.

An ordinary general meeting of the shareholders of West Kitty Mine Company was held on Wednesday, at the offices, 37, Walbrook, the chair being occupied by Mr. JOHN B. REYNOLDS. The SECRETARY (Mr. F. J. HARVEY) read the notice convening the meeting.

From the statement of accounts submitted to the meeting it appeared that the receipts for tin for the sixteen weeks had amounted to £4218 19s. 6d., added to which sundry other items brought the total receipts to £4258 1s. 6d. Upon the other side the labour costs had aggregated to £3377 17s. 6d., and this amount, together with the dues, income tax, parish rates, &c., left a balance of £165 17s. 9d. profit upon the sixteen weeks.

The company's agents (Captains JOEL HOOPER and JOHN WILLIAMS) reported as follows:—

The 118 fathom level west is worth for tin £7 per fathom. The rise in back of the 108 fathom level is worth for tin £7 per fathom. The 94 fathom level west is worth for tin £8 per fathom. The 84 fathom level west is worth for tin £13 per fathom. The 60 fathom level east south of slide is worth for tin £5 per fathom. The 50 fathom level west south of slide is worth for tin £9 per fathom. The rise in back of the 50 fathom level is worth for tin £14 per fathom.—Stopes: Two stopes in back of the 92 fathom level are worth for tin £18 per fathom each. Four stopes in back of 84 fathom level are worth for tin £16 per fathom each. The stope in bottom of 70 fathom level is worth for tin £10 per fathom. The stope in back of 70 fathom level is worth for tin £15 per fathom. Two stopes in back of 30 fathom level are worth for tin £12 per fathom each. We have 30 men working on tribute, varying from 7s. to 13s. 4d. in £1. We have driven about 40 fathoms of levels, communicated the rise from the 60 to the 20 fathom level, and fixed a new 13 inch drawing lift from the bottom to the 70 fathom level complete. We have also put in a new boiler to our pumping engine, and are now busily engaged making preparations for changing our pitwork from the 70 fathom level to the adit.

The CHAIRMAN said: Gentlemen, I never met the shareholders of West Kitty with greater pleasure than I do to-day, because we have gone through a period, or rather we are going through a period, of very great depression and disappointment, and I think it should be the pleasure of every official in a company to meet the shareholders and to do what in him lies to encourage them, while putting the exact state of matters before them. With reference to the statement of accounts you will see that we have only made a profit during the four months of £165 17s. 9d. That, no doubt, will be a great disappointment to the shareholders, but I daresay it is nothing more than they have been looking forward to, seeing the very low price of tin, and remembering the extra expense we have had to incur during recent months. The extra items not in the last accounts consist of £192 4s. 6d. additional for labour cost and bills; the parish rates, £132 11s. 5d.; income tax, £339 9s. 5d.; and the loss on the tin we have sold, as compared with the previous four months, of £397 2s. 5d., making a total of £1061 7s. 9d. That, together with the profit of £165 17s. 9d., would have given us a 4s. dividend, the same as we had at the last time we met. Now, gentlemen, we shall have no parish rates to meet, at all events, between this and the next meeting, nor will the income tax collector trouble us, and I venture to say that before we meet again our profits will show a considerable improvement. Tin is rising, and I think myself it will continue to rise. I speak, however, in the presence of one who knows more about the tin market than I can profess to do, and if I am too sanguine in my anticipations I should be glad if he would correct me. But I venture to think that inasmuch as the average price of black tin is £60 a ton, we shall be realising that price again before we are very much older, and then we shall be able to declare good dividends. I have no doubt that when I come to consider the position of the mine you will agree with me that that is not too sanguine a forecast. We have had latterly an extra amount to pay for coals in consequence of a large increase of water from the south crosscut. We are draining a large quantity of ground, and the water comes very freely indeed on our engine. In consequence of that we have already commenced to strengthen our pitwork, and this extra quantity of water has involved, of course, an extra amount for coals. We have also put in a new boiler, and have paid something towards our pitwork. Now, all that has involved the company in £192 4s. 6d. extra cost, but between this and the next meeting we shall have to incur something like an outlay of £270 in connection with the additional pitwork of which I have spoken. I don't know, however, that this extra payment will be felt as far as the next dividend is concerned to the disappointment of the shareholders. Now, I don't think there is anything in the accounts calling for comment further than this—that we have kept our output to the requirements of cost. The policy has been approved of by the large majority of the shareholders, but there are one or two friends who have written to me very kindly on the subject, doubting the wisdom of the managers in coming to that conclusion. Well, if we had sold the tin at the low prices which have been ruling we should not have it to sell when prices get better, as we confidently expect they will, and we should have laboured under this additional disadvantage, that we should have been obliged to take away tin at an additional cost, and should have been open to the charge of unfairly working our mine. That is a charge which has never been brought against the West Kitty committee, and I hope it never will be. We cannot work a mine like this for market purposes, and that would be tantamount to working it for market purposes. We have taken away as much tin as we could take away in the fair working of the mine. Now, the north part of the mine—the ground north of the cross cut, Captain Williams will tell you, is not nearly exhausted. You will see by the report that they have some very good stopes there, and other points of interest, and they are being prosecuted. But it seems to me that without doubt the future of this mine is in the ground south of the slide. It is evident from what Captain Williams will tell you, that there we are opening up what is practically a new property, and, as I have just told the committee, from what I can gather from Captain Williams, it does not seem unreasonable to indulge in the hope that the ground south of the slide will be as productive as the ground to the north. You must remember that it is very much larger in extent, and, therefore, I myself think that it would be no more than reasonable to look forward to getting an amount of tin from the ground south of the slide equal to that which we have had from the ground north of the slide. Now, it is evident in any case that we have there a most valuable possession. I spoke of it rather at length at the last meeting of shareholders, and if you will refer to my remarks on that occasion I shall want you to be kind enough to remember that I endorse everything that I then said. They have driven 18 fathoms east of crosscut, south of the slide. There they have laid open a section of very valuable tin ground, where the tin stands above and below them untouched. They have put up a rise from the 60, and that rise is now up 5 fathoms, and it is worth, according to the present price of tin, £14 a fathom, and, concerning that rise, Captain Williams will give you some information, but when they have the rise up another 5 fathoms they will proceed to drive east and west, continue the rise, and then open out their levels as they come up. You will see, therefore, that it is not too much to call the prospects of the mine "splendid." I am sorry there has been this break in the dividends. I cannot help regretting it although I candidly confess that, considering the times through which we have passed, and that we have made continuous dividends up to the present time, amounting altogether to £110,000, I should be an unreasonable shareholder if I expressed anything more than a slight regret because of the fact. The company, gentlemen, is in a fine financial position. We do not owe a sixpence, so far as the committee, Captain Williams, and myself are aware. We keep out of debt so that whatever comes

to us will come for distribution amongst the shareholders, and I confidently expect that I shall have the pleasure of listening to the declaration of many more dividends from this chair, and I am confidently looking forward to a long career of prosperity for West Kitty. (Applause.) I have much pleasure, gentlemen, in moving "That the statement of accounts and agents' report be received and adopted."

Mr. BUDD seconded the motion, saying that the committee were the recipients of the greatest confidence at the hands of the shareholders as to their management, which they returned by keeping all the shareholders thoroughly conversant with what took place—not only with the successes of the committee, but also with their failures. (Hear, hear.)

Mr. MATTHEWS enquired whether it was intended that the mine should work fully in the next quarter, or whether the output would be regulated upon the same principle as had been adopted during recent months.

The CHAIRMAN said that as much tin would be taken away as could be done consistently with a fair working of the mine.

Mr. MATTHEWS did not know much about the history of the mine, but he was aware that in regard to its management the West Kitty Mine held a premier position, and that the shareholders had the most entire confidence in the committee. Still, he had some doubts as to the policy of a restricted output, seeing that it was not at all certain whether the price of tin would recover itself. He was also struck by the fact that the other mines were not carrying out the same idea.

Mr. ROBBINS enquired whether it was not the fact that more had been spent during recent months than when tin was at a higher price.

Mr. LANYON: You have not made any reduction in the production of tin. You have taken out more than you ever did before. The SECRETARY: It is three tons more than last time, but not more than it has ever been by any means.

Mr. LANYON: At the present price of tin you will have to raise 3 tons more in order to recover the same amount.

The CHAIRMAN: We have been obliged to do that, and we have been able to do it in accordance with fair working.

Mr. MATTHEWS: Fair working?

The CHAIRMAN: It is a technical term. There is such a thing as the unfair working of a mine.

Mr. MATTHEWS: Taking the best.

The CHAIRMAN: Yes, and leaving the rest.

Mr. ROBBINS: The cost of working has increased.

Mr. LENNOX: The price of black tin was down, and the committee thought it advisable to meet the costs rather than have a large output.

Mr. LANYON: Mr. Reynolds talks about a dividend next time. Mr. LENNOX: It is possible to have a lot of dead work done now, which will be living work during the forthcoming weeks. The levels have to be driven.

Mr. ROBBINS: My question was whether we have not had actually more men employed during the last three or four months than during the time when tin was at a higher price.

The CHAIRMAN said the reply was unquestionably in the affirmative. There were, for instance, now 30 tributaries, who returned about 6 tons of tin per month, of course at a profit to the mine. It was also a fact that they had spent latterly more than before upon labour, and it was fortunate they had done so, otherwise they would not have discovered the rich lode in the south ground. They had driven that long and expensive cross cut, and had opened up the western ground, where there was reason to believe they had another valuable possession. Captain Williams would correct him if he were wrong, but he should rather look for an increase of cost, as the south section was being opened out. He had expressed the hope that there would be a dividend next time, because the figures before him were such as to bear out that expectation. He did not believe himself in the policy of forcing the returns, especially at the present time. He was exceedingly anxious that the mine should not be worked fast, but that it should be worked fairly and squarely for the benefit of those who were investors rather than speculators. (Hear, hear.)

Mr. ROBBINS thought the answer the Chairman had given to his question a complete justification of the policy of the committee.

Captain WILLIAMS expressed great regret that there was no dividend, and enumerated several extraordinary items of expenditure, such as the fixing of a new boiler, &c., which had occasioned extra outlay. There had been, moreover, a large influx of water from the south part of the mine, and at one time they almost feared losing the bottom of the mine. They had, however, succeeded in draining the mine, and had commenced to drive the western end again at the 60 fathom level, which they valued at £9 per fathom. In the rise in the back of the 60 fathom level the lode was worth £14 per fathom, or £28 for the length carried. At the eastern end the lode was about 4 feet wide, and worth about £15 per fathom. It was driven 18 fathoms east of crosscut. It was intended when the rise was up about 10 fathoms to drive east and west at the 50 fathom level, whereby they hoped to open up a good section of tin ground to the south of the slide. The object was to lay open as much ground as was possible when tin was low, so that when it rose in price it could be sold at a better value. Referring to the extra labour he said that the 30 tributaries were paid by results. During the coming 16 weeks they intended to change their pitwork, and in consequence they would have to stop their engine for two or three weeks. Their idea was to get ready for the stamps as much stuff as possible before stopping the engine, and he could assure them that they were opening up more ground than they were taking away. He hoped that when he next met them they would be in a better position, and he quite endorsed all that Mr. Reynolds had said respecting the south ground.

The motion for the adoption of the report and accounts was then put and carried unanimously.

Mr. ROBBINS moved—"That the best thanks of this meeting be and are hereby presented to the committee of management for their past services, and that the following do constitute such committee until the next general meeting of the company—viz. Messrs. G. Budd, J. J. Gair, W. M. Lennox, W. H. P. Martin, J. P. F. W. Michell, and John B. Reynolds." He said that in times of depression the committee were even more deserving of their gratitude than in times of prosperity. The present low price of tin was something over which they had no control whatever, but he hoped that after the passing of the Tariff Bill in America things would look a little brighter. He hoped there would be a dividend next time, but in any case there was the consolation of reflecting that the mine was in a very healthy condition and in able hands.

Mr. MATTHEWS seconded the resolution, which was cordially and unanimously passed.

Mr. LENNOX, in returning thanks, said that the committee would endeavour to deserve the gratitude of the shareholders even more in the future than they had in the past. He thought the shareholders could hardly have much conception of the time and attention the affairs of the company demanded. The interests of the shareholders and of the committee were identical, and the latter felt the loss of the dividend just as did the former. The Chairman had devoted a tremendous amount of time to the company, and was indefatigable in its interests. (Hear, hear.)

On the motion of Mr. GLASS, Mr. A. Gostick was reappointed as auditor of the company.

The proceedings then terminated with a hearty vote of thanks to the Chairman.

PENDING the completion of the reconstruction of the Main Reef Company, £4000 has been borrowed at 8 per cent. from the Alexandra Estate Company. This amount will shortly be repaid.

The Duke of Sutherland has seen fit to make a practical covenant with the County Council's Committee about the Kildonan goldfields. He has agreed to allow the committee, after Whitsuntide, 1895, to test the goldfields, and has promised to shape his future course in accordance with the result of the experiment.

WHEAL GRENVILLE MINING COMPANY.

A judicious policy of mine working.—Splendid results of development.

A general meeting of the shareholders in the Wheal Grenville Mining Company was held at the offices, 7, Union-court, on Thursday, the chair being occupied by Mr. R. W. GOULD.

The SECRETARY (Mr. D. Julian) read the notice convening the meeting.

The company's agents (Captain C. F. Bishop, Joseph Hosking, and Stephen Williams) reported as follows:—

Gold's engine shaft is sunk 5½ fathoms below the 232 fathom level. The 232 fathom level east of Gould's is being driven by a boring machine. This end is about 54 fathoms east of the shaft: the lode is large and worth for the part driven on £10 per fathom. The 220 fathom level east of Gould's is worth £16 per fathom. Fortescue's engine shaft is sunk 12½ fathoms below the 225 fathom level. Several droppers or branches are being met with coming from the south side on the main lode, which have greatly improved its value. The lode for the length of the shaft is worth £70 per fathom. The 225 fathom level east of Fortescue's is worth £15 per fathom. The 225 fathom level west of Fortescue's is worth £16 per fathom. The 205 fathom level east of Fortescue's is worth £23 per fathom. The 178 fathom level east of Fortescue's is worth £14 per fathom. Since the last general meeting we have put another rise through to the level above, in a lode generally worth about £20 per fathom. This has opened another piece of stopping ground. The 165 fathom level east of Fortescue's is worth £2 per fathom. The 120 fathom level east of Pease's is worth £3 per fathom.—Stops. There is one at the 225 fathom level east of Fortescue's worth £25 per fathom. There is one at the 230 fathom level east of Gould's worth £15 per fathom. There are six at the 205 fathom level, worth on an average £16 per fathom each stop. There are three at the 178 fathom level, worth on an average £14 per fathom each stop. There is one at the 165 fathom level worth £16 per fathom. There is one at the 150 fathom level worth £13 per fathom.—Surface Work: We still continue to extend and improve our surface dressing floors on the old part of the mine. We have 37 pitches working by 101 men. Average tribute 10s. 10d. in the £. We consider the prospects of the mine are good. Number of persons employed 544.

The accounts submitted to the meeting showed that the cash received for tin sold had amounted to £9384 0s. 8d., which, together with a balance of £321 6s. 8d., gave an aggregate of receipts at £9705 7s. 4d. Upon the other side the labour cost and merchants' bills for February had amounted to £2921 0s. 9d., for March £2940 3s. 4d., for April £2574 1s. 1d. The other minor expenses added to this brought the total expenses to £9443 14s. 4d., a balance remaining to the credit of the company of £261 13s.

The CHAIRMAN said: Gentlemen, like every other trade, mining has gone through a period of great depression. During the whole of last year the price of tin went down very considerably, and we are getting at the present moment for our tin over £25 a ton less than at the beginning of 1893, which would mean something like £12 a ton less upon our tin stuff. The downward progress of tin continued during the past quarter. In the first month of that quarter we got £43 12s. 7d. per ton. In the second month the average which we got for our tin was £41 a ton, and the directors then thought it was quite time they considered what course should be adopted under such circumstances. We believed, whether with good grounds or not—but the result has justified that belief—that the price of tin had about reached its lowest, and I think that at the last meeting I told you I thought so then. Immediately after I made that statement we met especially to consider what course it would be prudent for us to adopt in your interests, and we came to the conclusion that it would not be wise to stop any of the workings of the mine for the sake of lessening the output and so lessening the costs, because that would mean the dismissal of a great number of hands, and in these days one ought to do all one possibly can to employ labour, rather than to decrease the labour amount, if such can be done with prudence. We, therefore, came to the conclusion that the proper course to adopt would be to get out of the mine all the tin we were fairly entitled to bring away from all its workings, and that we have done. We also came to the conclusion we were not bound to sell it all, and instead of doing so we decided, after we had paid all expenses and until we had consulted you, that we would put a certain quantity of tin out of the tin house into a separate tin house, have it weighed exactly, so that we should know precisely how we stood with regard to it, and to sell no more. That is the course we adopted, and, therefore, when you look at the figures, you must bear in mind that the balance of those figures, as represented here, does not show the financial position of the company at all. Had we chosen to sell the tin which we have stocked we should have had a very much larger balance than is represented on this sheet; in fact, it would have been what it is now plus the value of the tin we have not sold. Now we put aside in the first month after paying all our expenses 15 tons. This we most carefully put into the tin house and marked it, as they are able to do, so that none of it could be abstracted without its being known. That 15 tons of tin we could sell to-day, if we chose, at about £4 more than the £41, which we had to take for the tin got in the month of February; so that, as I said just now, the result has certainly justified the decision we arrived at. Since that time we have added another 12 tons to the first lot. Now, I am speaking of the first month in the current quarter to show that our financial position is an exceedingly good one. We have put by from each sale 6 tons—12 more—so we have got carefully weighed, and could sell to-morrow 27 tons of tin, and that 27 tons of tin I maintain is as much a part of the balance as the balance at the bankers. Notwithstanding all the depression, notwithstanding that this depression was continued throughout the quarter, I maintain that Wheal Grenville has done exceedingly well. We were able to raise during the quarter 234 tons of tin altogether, and we sold 219 tons, figures to which I will refer again presently. I say that to have accomplished so much Wheal Grenville has done exceedingly well during the quarter. Then, so far as the development of the mine is concerned, I can say that we scarcely ever had such a quarter as the last one. The mine has turned out the usual quantity of tin in the western part, and a considerable sum has been expended in improving the floors with a view of catching more of our tin than before from our slimes. On the eastern part of the mine the floors have been added to as well. We have not yet completed our battery of stamps. We have two more axes of 12 heads each to come, and when they are put up we shall be able to return a great deal more tin than ever before. I remember on the last occasion on which we met, our friend Mr. Lane spoke of two points in the mine where it might be anticipated we should find an improvement shortly, and said that if we had either one or both of these points turning out hopefully, the fact would very materially enhance the value of the mine and improve your future prospects. One point was at the bottom of Gould's shaft, where we had driven a cross cut north. We had lost the lode in that shaft, which had dipped off north, we had driven a cross cut, and were just on the point of cutting the lode, and, of course, if we had done so, there was no doubt we should have cut a large piece of valuable ground. I am happy to tell you that after crosscutting and finding the lode, and driving 40 and 50 fathoms, we had a lode there better than we had before, although how much better is not determined at the present moment. We are driving on as fast as we can. Ahead of us some 16 or 17 fathoms we have got the main run of tin ground which we have had all the way up, and we want to reach that as speedily as possible. Therefore, all effort is being made to drive more. The other point was at the bottom of Fortescue's shaft, where the lode had dipped away north after we had passed the 225 level. After we had driven a few fathoms down it was fancied that the lode was curving back again into the shaft, and that we should meet it before the next meeting was held. Now the first point has come off in our favour, and the second point has also come off so much more hopefully that I do not know how to express myself better than to say that if ever we had a day when we had a right to rejoice in Wheal Grenville it is to-day. I have taken a good deal of trouble to examine all the lode in Fortescue's shaft from where we touched it in the 150 down to where we have got the richest vein we ever had in Wheal Grenville, which is about the 238 or 240. I find that the

150 fathom level has been driven 120 fathoms eastward, and there, during pretty nearly the whole of the drive, that lode has been reported to us to be worth various sums between £9 and £13. Now we came down 15 fathoms from there, and at that point we have driven 130 fathoms on the lode east, and there the lode has been for the most part of that drive worth from £13 10s. to £15. In the 178 we drove 13 fathoms, where again the lode continued much the same as in the one above. In one or two places it was as low as £8. Now we come from the 178 to the 205 in one lift, and when we reached that upon which we have driven 60 fathoms eastward the lode had improved until we got it at the value of £15, £18, or £20. Two winzes have been driven between these two levels a long distance—27 fathoms; in fact, about 10 fathoms each side of the shaft, and there the lode has been worth from £15 and £18 to £20 a fathom. In the rises going up about 30 fathoms from the shaft we got a lode all the way from the 178 to the 205 worth £35. There again the lode had considerably improved in depth, and when we sunk 20 fathoms from there down to the 225 the lode was found to have improved again very much. We have driven 40 fathoms upon it, and it has never been worth less than £20, and has often gone as high as £40. There we lost the lode; it dipped away to the north, and we had to wait, we did not know then how long, before we got it again. About three weeks ago the lode began to improve in the shaft. It curved back again, the shaft ran upon the lode, and it was reported there at the time that the lode was estimated to be of the value of about £50 a fathom. Then, in two or three days, as the whole breadth of the lode came in, it was reported to be worth some £70 a fathom, and now there is no possible doubt of the fact that it is worth £100 a fathom—(hear, hear)—and that is a moderate estimate. I wrote to Mr. Bishop as to the value of the lode, and he replied—“We have still got a good lode in Grenville.” I wrote to him again, asking him for his assays of the stuff brought away, which he sent me. Now on that day—it was somewhere between the 16th and 20th of April—we had brought away nearly 100 tons of lode stuff out of the shaft that had been carefully assayed, and the average of the first seven piles came to 5½ per cent., and then came some richer stuff, which assayed up to 6 per cent. Now he first said that was worth £50; then he said £70, and now he says £100. In a letter he says:—“I have valued the lode at £100 a fathom, and you may very safely state its worth that.” I will first take the 5½ per cent. Here is the calculation:—Our shaft is 3 fathoms in length. Now if we take it that it is only 1 fathom in width and 1 fathom in depth, that would give us 3 cubic fathoms of lode stuff. Now if we take the 3 fathoms at 15 tons per fathom, we should get 2 tons 12 cwt. of tin in 3 fathoms. There is £102 8s. But supposing we got 3 tons and 8 cwt. of tin to the fathom that at £44 would be worth £149. If we take it at 6 per cent. we have 3 fathoms still, and if we take only 15 tons of tin instead of 20 tons that would give us 3 tons of tin, or £132. So I say that, with his usual modesty, our friend has confined himself to a very moderate sum when he estimates the lode at £100. Clearly it is worth more. The only question is—How long will the yield continue? Nobody can tell us that, but inasmuch as it is the whole length of the shaft, I have very strong hopes that it will continue in length, and we shall have a good many fathoms of rich ground altogether. But I cannot see why the lode, which has gone on improving 70 or 80 fathoms in depth, should break off now. The probability is in our favour that as we go deeper with the shaft we shall get the lode even richer than we have got it now. At all events, so strongly do I feel on this subject that although I should have been prepared to suggest to you at this meeting, or a future one, seeing the thousands of fathoms of ground we have untouched above the depth we are at now, that it would not be an unwise thing to stop sinking the two shafts for a time; but in view of this such a course would be suicidal, and is not to be thought of. Here we are at the very bottom in the richest piece of tin ground we have ever had in the mine, and in the shaft every fathom we are driving each way gives us such a number of fathoms of back, that to stop sinking the shaft now would be simply madness. So that, with your permission, we shall go on, and bring away, between now and the next time we meet, all the tin we fairly can get in the mine, and you may take my word that the mine will never be worked unfairly. We shall only bring away what we are fairly entitled to. With your sanction, for the present we shall do as we have done at every sale hitherto—we shall put away a certain number of tons of tin, and keep your money and dividend in tin instead of at the bankers. It is for you to say if you approve of it. If you do not approve, we can sell the tin instantly; but I hope you will. Now, gentlemen, having said so much about the mine, we come to the figures for the past quarter, and I don't think, bad as they are, that they are altogether unsatisfactory. We sold, as I told you, 218 tons of tin, and we received for them at the rate of £42 15s. a ton. That is a miserable price—it is about the worst price we have ever got for our tin, with one exception. The quarter before we had nearly £4 more, and the quarter before that we had £6 more. We got, as I say, £42 15s., but when I came to examine what other mines in the county have done, I don't think we have any cause for dissatisfaction. We have had the best price of any of them whose output is on the same scale as our own. So far as the large mines go our price has been at the top of the tree. So I think we may congratulate ourselves upon that. We got altogether for the tin £9384. If you were to add the value of the 15 tons we did not sell on to that the amount would have come to between £10,000 and £11,000 for the quarter, which would not have been bad. Out of that £9384 we have spent in labour costs £5835 8s.; merchants' bills, altogether, £2600 0s. 2d.; dues, £377 19s. 3d.; rates and taxes, £371 11s. 1d. We paid for law charges £175 3s. 2d. in connection with the rates and taxes and for all other charges £83 12s. 9d., making the total sum of £9443 14s. 4d. You see we have just about sold enough tin to meet our costs for the quarter, and have got tin out of which we could pay a small dividend if you liked. We have a better price for our tin—it averages £44 2s. 6d.—so we may expect to get a better price throughout the whole quarter, and I think we shall sell a larger quantity. At the end of the quarter we shall, I think, have a very satisfactory balance in hand. We shall, of course, have the £261, and then we have got actually in reserve in money £334 2s. 11d. We have stocked 15 tons of tin up to April 6th, which at £44 a ton will give you £660 more. Looking at the extraordinarily low price of tin Wheal Grenville has done very well, and during the next quarter we may hope that it will do better. The savings we have been able to effect, and which we hope to be able to effect, sold at the same price as at present, £44, will give us £1255 more. With these remarks I beg to move “That the statement of accounts, now before the meeting, with the agents' report, be and are hereby received and adopted.”

Mr. BELLINGHAM seconded the motion.

Mr. STRAUSS offered some remarks in criticism of the policy of storing the tin, and urged that in inviting the shareholders to adopt it the directors were proposing that the shareholders should become speculators in tin. He did not say that the shareholders ought not to do it, or that the policy of the committee was a bad one, but he thought the shareholders should have the issue put plainly before them.

The CHAIRMAN cited a remarkable instance of the hazardous nature of speculations in tin, in which he himself had been interested. Some friends had fancied that tin would go higher and refrained from selling, with the result that they got nothing where they might have got £6 a ton upon it. He had never acknowledged, however, that the policy advocated by the committee was a speculation in tin. He should, in fact, be extremely sorry to induce the shareholders in Wheal Grenville to enter into anything of the sort. There seemed to him, however, to be a great difference between speculating in tin and holding a stock of tin for a short time, watching the market carefully, and getting out at a favourable opportunity.

Mr. STRAUSS saw no difference.

The CHAIRMAN pointed out that the 15 tons of tin, which had been carefully weighed and put into the tin house, could be sold to-day for £4 a ton more than when they commenced to stock, and they had only commenced a short time ago.

Mr. STRAUSS congratulated the committee upon the wisdom they had shown in adopting this course, but still maintained that it amounted virtually to a speculation in tin. At the same time, he was not going to advise that this should not be done, but it certainly amounted to that.

The CHAIRMAN: If you were going to advise the shareholders never to stock their tin—that is to say, to sell their tin every 14 days, no matter what price it may fetch, I should occupy a little time trying to convert you to my views.

Mr. STRAUSS repeated that he offered no objection to the policy as a policy.

The CHAIRMAN heartily agreed with Mr. Strauss that speculating in tin was open to great objection. He thanked Mr. Strauss for having expressed his willingness to leave the matter in the hands of the committee. The shareholders could hardly do better than take his advice. They would watch the price of tin day by day, as carefully as if it belonged wholly to them, and not to the shareholders, and would sell immediately they thought they could do so with advantage. They might decide to keep the tin for a week or a month, or even longer, but if the matter were left to them they would give it their utmost attention, and would sell at a fair price. £41 a ton was hardly a fair price for tin. (Hear, hear.)

The motion for the adoption of the report and accounts was then put and carried unanimously.

On the motion of Mr. A. STRAUSS, seconded by Mr. RADFORD, a unanimous vote of thanks was passed to the manager, purser, and agents of the mines.

The CHAIRMAN then sought the opinion of the meeting on the question of selling the tin on stock and pay out of it an interim dividend, or let it remain until the next meeting, which would, in all probability, take place in Cornwall.

Mr. STRAUSS was of opinion it would be prudent to let it stand over.

A SHAREHOLDER thought it better to leave the matter in the hands of the committee, provided it be an understanding to them, of course, that a large quantity of tin should always be kept on stock.

Mr. LANE alluded to the Chairman's statement that the mine had improved in depth. The company's captain and all the experts in Cornwall were of that opinion. They had the same channel of ground as the Dolcoath Mine. Wheal Grenville was on one side of the hill and Dolcoath on the other, and as the latter had improved in depth it was reasonable that the former would. He was very pleased the Chairman had stated they intended to go on sinking. This had been recommended by the agents, and they were going to sink as fast as possible. The committee were going in for the full development of the mine, the advantages of which would accrue to the shareholders in the future, provided, of course, the price of tin did not go lower. He himself was fully satisfied, and the committee were, with the value of the property, and he felt sure the shareholders would feel similarly when they met again. (Hear, hear.)

The meeting closed with a hearty vote of thanks to the Chairman.

DON PEDRO GOLD MINING COMPANY, LIMITED.

Resolutions of reconstruction carried.—Past and future management.

An extraordinary general meeting of the Don Pedro Gold Mining Company (Limited) was held on Monday, at Winchester House, under the chairmanship of Sir FREDERICK DIXON HARTLAND, Bart., M.P., for the purpose of considering and, if deemed expedient, passing resolutions winding up the company, with a view to reconstruction.

The SECRETARY (Mr. R. Norton-Dawson) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, you are all, I suppose, aware of what took place at our last meeting, and since that time the directors have not been idle with regard to the affairs of the company. We have succeeded in obtaining, partly from the directors and partly from the large shareholders, a sum of money sufficiently large to enable the property to be kept together, and I think you may take it for granted that nothing detrimental has occurred to the mine. Since we last met we have been able to send out to the mines a sufficiently large sum of money to keep them going until the result of this meeting and of the confirmatory meeting is known. The directors have taken a great deal of trouble in the matter because they were perfectly satisfied in their own minds as to the value of the mine, and only questioned how so valuable a property should be worked. A very large number of letters have been received from the shareholders, and I think I am correct in saying that there is not one of them who has not objected to the delay and loss of money which will be occasioned by sending out a new engineer to the mine. All have said:—“You know the mine is good and can bring proof of the fact before us; it is a great loss of time and money to send any one out there.” I will just read you one letter received from Sir Henry Thompson, an old shareholder in the company. The Chairman then read the letter in which Sir Henry said:—“As far as I can judge I think the plan devised a reconstruction with the principle of a 5s. call is a wise arrangement, and I am quite prepared to join it. I observe the cost of sending out another surveyor is very considerable, and I am disposed to agree with those who think it is unnecessary.” That seems to have been the general opinion, and we had Mr. Touzeau, in whom we had every confidence, and the late mine captain, Mr. Jeffreys, who had just returned from the mine, and we thought that if we got these two gentlemen, and put them under the search light of a good expert that we might be able to get all that was necessary for the meeting without wasting time and money. Mr. Tolpitt, our new director, was good enough to find a man in whom the public have every confidence. He was unknown, except, of course, by repute, to any of the directors, and, therefore, we were able to judge of him entirely without personal bias. I have a very high opinion of his knowledge and power of examining into these matters. Fortunately we were able to get him to go down to Plymouth with Mr. Tolpitt, and there investigate as to the state of the mine with Mr. Jeffreys. He did that very thoroughly, and Mr. Tolpitt will kindly give you exactly what took place, and Mr. Harvey's report as to the state of the mine will be read to this meeting. If it is satisfactory I think you might decide that it would be better to spend no more money, and to waste no more time. That, however, will be left in your hands. Our proposal is to reconstruct this company, and certain of the figures Mr. Tolpitt will put before you. The number of shares at the present moment is 133,102, and what we propose to do is to issue 125,000 of those shares, which we think we shall be able to place amongst the shareholders, and what are not placed will be very willingly taken up on the market. That will leave to us about 25,000 to be allotted. This arrangement, we hope, will bring us in about £25,000 to begin with, and I have a strong feeling that the money should first be used in the development of the mine, and that we should not continue to work it from hand to mouth in the hope of paying our expenses by the small amount of gold we might be able to get. That has been, perhaps, in the past a regrettable failing on our part, but we wanted to get dividends as quickly as possible. There is no doubt that we ought to have trusted our shareholders more in thinking that they would not be impatient if we took time to develop the mine a little more. There are at present practically no debts hanging over the company, except the debentures, and with regard to those debentures I have a very strong opinion that we ought not to be left at the mercy of the debenture-holders any longer. The mine should be a shareholders' mine, so that the first earnings may not go to paying the interest on the debentures, and, accordingly, I propose that all the debentures should be as quickly as possible paid off, and we hope we shall not be obliged to go to any of the holders and ask for a renewal of them, although that may have to be done as a temporary measure. The Chairman concluded by moving resolutions winding up and reconstructing the company upon the lines indicated.

Mr. F. FRASER RAE seconded the resolutions.

The SECRETARY then read the report of Mr. Harvey as to the position of the mine as follows:—

MR. HARVEY'S REPORT.

Burnt Ash Hill, Lee, Kent,
April 23, 1894.

To the directors of the Don Pedro Gold Mining Company (Limited).

Gentlemen,—Having at your request accompanied Mr. Tolpitt to examine Captain Jeffrey as to the present position of the mine, I have no hesitation in expressing my opinion that, as a property, it is just as good as it was when I went into its history at the reconstruction of the company in 1882. I am favourably impressed by Captain Jeffrey, who appears to me to be a thoroughly capable miner, and, what is of more advantage to you, he knows every foot of your mine. I gather from the information placed before me in recent reports, and from Captain Jeffrey's answers to my questions, that the sole cause of the company being in its present difficulty is owing to the mine not having been properly developed by sinking the shaft well ahead of the levels now being driven, the consequence of which is that the mineral won is in wet ground instead of dry, and the expense of working is thereby ruinously increased. I went thoroughly into details of cost with Captain Jeffrey, who has, like many other mine managers, been obliged to carry out a policy of which no miner could approve, and I feel convinced that under proper management the mine can be thoroughly developed at little more than half the recent expenditure, a considerable portion of which has evidently been employed on unproductive surface work, for which he is in no way responsible. The course to be adopted is precisely what I advised 12 years ago, and what has been advised by your own consulting engineer and Captain Jeffrey himself; namely, to sink the shaft to 70 fathoms, in order to drain the mine down to the 60 fathom level and to continue sinking 10 fathoms in advance of any subsequent levels driven. The mine is evidently in a peculiar formation, which requires the greatest care in handling, but there is nothing to prevent its being easily worked by an experienced man. I am disposed to believe that the main shaft has been a costly mistake, but, as the expenditure has been incurred, it must necessarily be continued, as it is the only entrance to the mine; but Captain Jeffrey makes a very sensible suggestion to bifurcate it at its present depth and carry down two smaller shafts at 2 or 3 fathoms apart, which can be sunk at a much reduced cost and outlay for repairs. He calculates the rate of sinking practicable at 2 fathoms per month, with close timbering. The main shaft, which also must be pushed on with, can be driven at the rate of 5 to 6 fathoms per month, and while these works are being done all stoping in the present levels should be suspended. There is, however, according to Captain Jeffrey, a fair amount of mineral obtainable in other directions, which will yield a moderate amount of gold without interfering with the important work of development. I gather that some improvement might be made in the present system of reduction by the use of better gold saving appliances. —Morro de Santa Anna Mine: Captain Jeffrey appears to entertain a strong opinion as to the value of this quartz mine, which, after some expenditure in the usual careful manner was abandoned by the company some years ago in favour of the Maquina Mine, and it will be a question for you to consider whether it might not be desirable later on to work it in connection with the latter. He reports the levels intact, the quartz to yield 3/4 ounce gold per ton, and five heads of stamps, being useless at Maquina, which could be erected and driven by water power at a small expense. The Passagem Mine, now being worked with advantage by the Ouro Preto Company, is on the same line of reef within a short distance. In any case Morro de Santa Anna appears to be a valuable property in reserve. —Yours faithfully,

O. J. HARVEY.

Mr. TOLPITT said that his colleagues having practically given him *carte blanche* in the matter, he selected from several mining engineers who kindly offered their services a gentleman with whom he had formerly worked for many years, Mr. Harvey, who had had 45 years' experience of mining in all parts of the world, and who knew all about the mine, having already rendered assistance at the last reconstruction. Captain Jeffrey was unfortunately suffering from a severe cold, but he came to Plymouth, and was under close examination for three hours. From what he had gathered at the interview he (the speaker) was able to confirm every word in Mr. Harvey's report, and, leaving that to itself, he wished to call attention to a few figures which he had extracted, after having examined matters in London and interviewing Captain Jeffrey. In the first place, he wished to call attention to the tremendous increase which had taken place in the expenditure upon the mine. Taking the balance sheets of the past three years the expenditure at the mine for 1890-91, including wages, timber, stores, &c., was £9772 2s. 10d., when the exchange was 1s. 11d.; in 1891-92 it was £12,370 4s. 1d., when the exchange was at 1s.; in 1892-93 it was £14,134 14s. 9d., with the exchange rate at 11d. In the first year, it was only fair to say Mr. Touzeau was in charge of the mine, and from the information he (the speaker) had obtained from Captain Jeffrey he had no hesitation in saying that the rate of expenditure incurred then was the normal rate. When Captain Jeffrey resigned he had underground in the mine 50 men, and an additional 30 on the outside—80 in all. Assuming that the same number were employed during the past year, when there was a reported scarcity of labour, it was quite easy to see that the money expended had not been purely and simply for development; but that some of it had been thrown away on the surface. In regard to Captain Jeffrey's opinion as to the absolute necessity of sinking the mine, he found, on going back through the reports, that this was what both Captain Jeffrey and Mr. Touzeau had persistently recommended. They both pointed out that it was utterly impossible to open the mine without sinking the shaft, driving the levels, and making room for the men to work at the stoping. Why this had not been done he could not say. He had been extremely anxious to get from Mr. Jeffrey some idea as to the cubical content of the lode, so that some estimate might be formed of its value. This it was practically impossible to do, for the lode was very irregular, but from a measurement Mr. Touzeau was kind enough to give it appeared that a diagonal cut across the lode gave a width of 76 feet, which was simply enormous. He asked Captain Jeffrey as to the present position of the mine, and he would read to the meeting the rough notes he had taken at the time:—"Plenty of lode still in 50 fathom crosscut, but full of water. Going north in lode still, but cut out in south at No. 1 stopes. The 60 fathom level is not sufficiently advanced to drain the 50, and there is no sump in the shaft. If the shaft were down to the 70 fathom, and the mine drained the output could have easily reached 50 tons per day at 15 dwts. to the ton would give 37 1/2 ounces, which for the month was 937 ounces, or £3280 per month, or about £35,000 per annum. Going north in the 60 fathom level the Canoas lode will be cut, and if a rise be put up gold can be produced from there and other places while sinking and driving are going on. There is a good lode left above the 40 level (where the recent nugget came from) which can be re-opened. The mine can be worked at present on £700 or £800 per month, and when in full work at gold raising the cost should not exceed £1000 a month. The present rate of expenditure can be materially reduced. The Gordon shaft is a huge mistake. Instead of going under the lode and carrying the broken ground on top of it, it should have been put in on the other side of the hill and driven towards the lode. The shaft as made is altogether too costly, and there should have been made two separate shafts, 2 fathoms or so apart, which could have been sunk at half the expense. Captain Jeffrey now proposes to bifurcate the shaft at the 60 level, and make it into two, with 2 fathoms or so between, and communications for ventilation." Continuing, Mr. Tolpitt said that the cost of sinking the shaft, which could be done at the rate of about 2 fathoms per month would be about £1500. For the present there would not be required more than 30 men underground and on the surface from 10 to 20, according to circumstances. When in full working, not more than a hundred men would be required underground. The monthly cost had been estimated, and with the necessary reductions it could be brought down to very much less than it was at present. That was all he thought it would be necessary to say. He might, however, state that he was ten times more satisfied than ever before as to the value of the mine, and if they could not stop the leakage that was going on, and reorganise the whole mine from beginning to end, they were not fit to have a seat on the board. (Applause.)

A SHAREHOLDER enquired who was responsible for the expenditure in the past, and for the fact that the advice of Mr. Touzeau and Captain Jeffrey had not been carried out.

Mr. TOLPITT urged the meeting not to go into that matter; but to let bygones be bygones.

Mr. KEBLE asked what assurance there was that the increase in the increase in the capital would not be expended in the same manner as in the past.

Mr. TOLPITT attributed the laxity in the past expenditure to the fact that they had never worked at all upon estimates drawn up before hand.

The CHAIRMAN, in answer to the question what fees the directors had drawn during the last year or two, said they had only taken half fees, and had frequently accepted great personal risk on behalf of the company. He, with his co-directors, had at one time

been under a liability to find £5000 with a specified time. In fact, they had gone out of their way to do what few other directors would ever have done.

Mr. LINDOW did not understand why the directors should be asked to forego their fees, seeing the anxiety they had had to encounter and the difficulties they had had to overcome. He should like to ask, however, whether the board contemplated furnishing any further statement as to the financial position of the company.

Mr. W. BEVETT held that if the directors had known what was going on at the mine they were responsible for it; and if not, then they ought to have known.

Major-General SIM asked whose policy was to be carried out after the reconstruction.

The CHAIRMAN, in reply to these and other questions and criticisms, said it was quite true that the first call would not entirely pay off what was owing upon debentures; but he had little doubt they would be given time. There would at least be a sufficient sum to go on with the development until they were able to raise 50 tons a day out of the mine. In regard to the past management of the company's affairs, the two great difficulties against which the board had had to contend were distance and scarcity of money. Orders sent from London were met with the statement that it was impossible to carry them out or that more money was required. They did exactly what they thought to be the best. The present financial position was faithfully reflected in the last balance sheet, and there had been few alterations since then. If all the liabilities of the company were to be paid off at the present moment some £16,000 would cover them. The future policy of the board would be a firm one, and they had quite made up their minds that their instructions should be carried out. One of their first actions would be to appoint a man in whom they had perfect confidence to go to the mine and take charge. Beyond that he could hardly say what would be the action of the board.

The resolutions were then put and carried unanimously.

THE GOLD FIELDS OF MYSORE, LIMITED.

Proposed increase of capital.—The south shaft to be developed.—Favourable reports on the property.

An extraordinary general meeting of this company was held at the Cannon-street Hotel, on Thursday last, under the presidency of Lord RIBBLESDALE, the Chairman of the company.

The SECRETARY (Mr. John Garland) having read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, I do not think I have very much to add to the circular which is in your hands, and which clearly lays down our position and the action we propose to take of raising the capital of the company to £275,000, and providing £55,000 for developing the mine. I had the courage to ask Mr. Garland to look up the old files of reports of these meetings to see how far your board had been consistent in its policy. Consistency seems a very rare thing in these days, and I do not attach the enormous importance to it that some people do. I think that circumstances should always alter cases, and that people who are consistent in the face of what is obviously to the advantage either to the office or the people they are interested in are making a mistake. I really think that the policy of the board will stand the rather severe test to which I put it. I see that on the 29th of January, 1891, I said:—"We have so far reversed our policy as to discontinue mining to a very great extent," and I went on to say that "where we have left off mining we have done so with exceedingly good prospects in nearly every place, but that, practically, we had now ceased to be a mining company." I should say that again, because what I meant there was that we did not mean to mine ourselves with the capital we had, unless circumstances arose which made it desirable to raise fresh capital for the purpose of mining. It will be in the recollection of you all that last January I told you, speaking of the Golconda block, what very good prospects we had there, and I said we had in our minds the idea of trying to form a new company to work that block. It is almost a platitude to speak of the bad times, and I do not want to refer to them, but they have been against bringing out anything. At the same time we are getting better reports every week from this block, and we are accumulating reserves. I think the reserves at the end of last year amounted to 8000 tons, and I have no doubt that it has increased by another 2000 tons since. We, therefore, feel that we cannot go on holding our hands in the face of these good reports. It is evident the public will not come forward and buy our land, and consequently it is our duty to do something ourselves. I am not at all sure, but I think that after careful consideration the balance of opinion of your board is very much in favour of our taking this course in preference to bringing out a new company. We think it is far better for us to work this block than for another company to do so; and that the advantages we shall derive from doing so are tantamount to a private individual working for himself instead of for another person. We also think that we can work the company more thriftily. We shall have many advantages in bringing out this company besides that of economy. We have an excellent agent on there, and although I do not suppose that he would be able to manage the whole concern, Captain Rowe would be there to start everything. As I said, the circular puts the matter very clearly as regards this south shaft, and towards the end of the circular you will probably have noticed that the directors take the opportunity of pointing out how very good the company's property is as a whole. We give you a tabulated report of the West Balaghat block. I think, perhaps, you would like to know something—assuming these resolutions to be passed—of the board's policy as regards calling up the capital. Our view would be to have nothing called up on application, and only 2s. 6d. on allotment. We should call up the rest of the capital only as it was required, and although we should in the first place consider the interests of the company and the mine which we hope to develop, we should certainly, in the second place, consider the convenience of the shareholders' pockets as far as possible. I do not know that I have anything to add. I think this is the right thing to do; in fact, as times are, it is the only thing to do, and I believe that by taking this new departure we are taking a wise course, which I hope will be fruitful, and conduce generally to the fortunes of this great company. I have now the honour to propose—(1) That the capital of the company be increased to £275,000, by the creation of 55,000 new shares of £1 each; (2) That the said shares be offered in the first instance to the existing shareholders of the company, in the proportion of one new share for every four shares now held by them."

Sir CHARLES TENNANT, in seconding the resolutions, thought this was the right course for the shareholders to take, and one which would tend eventually and shortly, he hoped, to the prosperity of the company.

Mr. GILBERT ELLIOT considered that the directors had acted wisely in taking the south shaft into their own hands and working it. The south shaft was a very good mine, and a very strong point in the case was that they intended to retain it in their own possession. The discoveries in the south shaft and the important developments in other directions proved that the Gold Fields land was never so valuable as it was at this moment. If they took a map of the Colar district, and ran a pencil from the south shaft to the new trial shaft in the Ooregum ground, they would find that the reef in the south shaft was also developed in the new trial shaft in the Ooregum ground. There it was about 5 feet 4 inches, carrying gold over 2 ounces to the ton, so that they had a repetition of the south shaft reef passing through the grounds of the Nundydroog and Ooregum Companies, and then right through the ground west of the Champion Reef. Over 50 chains of the Gold Fields ground ran through the Champion Reef. That was a matter of very great significance for the shareholders of the Gold Fields Company, because, sooner or later, the Champion Reef must buy the ground. He had reason to believe that there

was another Richmond in the field, and that the Champion Reef would not have this ground without competition. Mr. Taylor had pointed out on previous occasions how valuable the prospects were in the south shaft and also in the new trial shaft. He had also told them the directions in which the reef was going, so that he must take it that the ground west of the Champion Reef was very valuable indeed. If they went north west they found that this company had a mile and a quarter's ground passing away to the Nine Reefs. That was a very valuable piece of ground. Prospecting had been going on west of the Balaghat ground, and there they had also good prospects. Then, again, at the recent meeting of the Nundydroog Company, Mr. Taylor said he had reason to think that the reef in the Kennedy ground was not the same formation as that being worked in the other parts of the property, so that the Colar Field was pretty well proved to be an area seamed up with various reefs. As an old miner, he thought the directors had acted very wisely indeed in retaining the south shaft in their property. He asked what the directors intended to do, supposing there was a large residuum of shares not taken up?

The CHAIRMAN said his impression was that all the shares would be taken up, but if there was a residuum the directors thought of offering them *pro rata* to the shareholders.

Mr. WILLIAMS said the report which had been submitted to the shareholders must inspire hope as to the early and brilliant success of this company. He had criticised the company in the past, and he was glad to see that it was now in a position which it had never occupied before. (Hear, hear.) He was aware that the Indian mines lately had not been quite so much in favour as they were formerly, but that state of things would not last. These mines were well governed by directors whose conduct must stamp them with integrity and honour and sound business efficiency. (Applause.)

Mr. CUTLIFFE asked whether if the shares were not taken up by the shareholders *pro rata* the directors would offer the balance to those who wished to take them up.

The CHAIRMAN said no board would propose a scheme of this sort on the assumption that there was going to be a large residuum of shares. They had brought it forward on the assumption that the shares would be taken up, and he ventured to say that they would be taken up.

Mr. JOHN TAYLOR said: I should have hardly thought that it would be necessary for me to say anything to-day; certainly it is not necessary for me to detain you many minutes. There is evidently a little feeling on the part of one or two gentlemen in the room that there may be some doubt in the mind of the board as to the mode in which they will deal with the properties in the event of this money being subscribed very shortly. Now, there is no doubt in our minds with regard to the properties. I pointed out at the meeting held a short time ago how the reef had improved in south shaft, as it was sunk below the 280 feet level, and how a continuous and productive reef had been proved in two levels below that, viz., the 385 and the 470 feet level. That was about three months ago. Since then these levels have been driven further distances, both north and south of the shaft, and the result has been a still further improvement in the average of the reef so far as it is exposed in these workings. It, therefore, appears to me to be manifest, in view of the situation of these developments at south shaft, that this mine should now be vigorously attacked with rock drilling machinery, which you all know works extremely well, and which has been of so much advantage to the other mines on the field, and that the workings should be carried on with very much greater rapidity than we have hitherto been able to do with hand labour only. It will further be evident to you from what his lordship has said with regard to the reserves of ore, that a considerable extent of stoping ground has already been opened up. Gold quartz is there available for extraction, and I think it will be your opinion that a mill ought to be sent out and erected at our south shaft as soon as possible. (Hear, hear.) Beyond this we have the very important discoveries recently made in our prospecting works, more particularly in the West Balaghat block, and also in other parts of our very large property. These must be undoubtedly followed up, and I think we shall all agree that there is every indication of very excellent results being obtained. Now, the outlook of our company appears to me to be extremely bright at the present time, and I trust that the shareholders will unanimously adopt the suggestion which is now placed before them, and that we shall soon see these important works vigorously taken in hand. Mr. Gilbert Elliot has, I think, very fairly and correctly placed before the meeting certain statements that I have made previously in this building, in connection with the companies of which we have the management, and he has said that he thinks the prospects were never brighter. Gentlemen, I think I should go a little further, and say that I do not consider the prospects of the company were ever as bright as they are at this moment. (Applause.)

Mr. DYER said he observed it stated in the circular that in the opinion of the board the time had not arrived for the formation of a separate company to work this property. He wished to know if this opinion had been largely arrived at from the fact that the board found a difficulty in raising sufficient capital to form a separate company in consequence of there being so few years of the lease to run.

Mr. ELLIOT said the Mysore Government would not do anything which was not absolutely fair under their own regulations, and at the expiration of the lease they were certain to renew it.

Mr. WALKER suggested that the shareholders might be allowed to transfer their allotment to nominees.

The CHAIRMAN said it was a valuable suggestion, and the board would certainly consider it. In reply to Mr. DYER, they had in the office a minute of the Government of Mysore distinctly bringing themselves to renew the lease on fair terms when the proper time arrived. The reason why the directors did not form a company was that, on the whole, they thought it a more thrifty way of dealing with the bit of land in question, to get a little capital of their own to work it. They would thereby save an enormous amount of trouble and expense, in addition to the difficulty of getting a fresh board, &c. This was a new departure, but the board considered it a sound departure. (Hear, hear.)

The resolutions were then put and carried unanimously. A vote of thanks to the Chairman brought the proceedings to a close.

WEST ARGENTINE, LIMITED

A new proposal for the shareholders.—Unanimous and hearty assent.

An extraordinary general meeting of the shareholders in West Argentine (Limited), was held on Thursday, at the Cannon-street Hotel, for the purpose of considering and, if thought fit, passing a resolution, authorising the directors to enter into a contract for granting a lease of the mining concession and rights of the company in the Argentine Republic, and for disposing of the mining fixtures, machinery, and plant.—Mr. J. T. HORWOOD, J.P., D.L., presided.

The SECRETARY (Mr. W. P. Owen) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, it now becomes my duty to lay before you a proposal we have received, and which I hope will meet with your approval. As there are several shareholders here, and there may be some who have recently joined the company, I think it may be convenient at the outset to call your attention to what is going on in New Zealand. We received your mandate some time ago to reconstruct, and try a venture in this colony of New Zealand. We did reconstruct, and we became co-partners in a very promising property, called the Tipperary Mine. That mine, I am glad to say, was visited by one of your directors, and as I myself had twice visited the property in Argentine, I think we are very well able to speak on both subjects to-day. When we took over the Tipperary Mine—a mine of considerable promise—we understood that about £57,000 worth of gold had been taken out of the upper workings, and we thought that, rather than

spend money on the Argentine property, which was somewhat problematical at that time, we had better invest it in a property which had such a good record. My esteemed colleague, Mr. Tavenor, went out there and examined the mine, and he was perfectly satisfied with it. We had also a very eminent local engineer, Mr. L. O. Beal, to advise us, and he knew the property most intimately. We determined, on his advice, to continue the upper level right into the hill. We have done this, and have come across various small patches of quartz, though nothing very important as yet. As we were proceeding, however, and expecting to come across a good reef, we met, unfortunately, with what is called there a local disturbance. For the benefit of those who are not mining experts, I will explain it in this way. Instead of the reef going down vertically to unknown depths by some freak of Nature it has been turned suddenly on one side, and, therefore, the tunnel, instead of meeting with it, met with what we call country rock and local disturbance. We do not know exactly how far we may have to go until we get really to the reef again; but that is the work that is being pushed on with all speed and with all the energy we can devote to it. Mr. Beal also advised us to drive a low level adit about 350 feet below the upper adit, so as to strike in depth any reefs which we may come across. This would also have the effect of draining the mine and allowing us to get out the quartz at very much less expense. It is supposed that when we have completed this low level adit about 4 dwts. to 5 dwts. of gold would furnish the whole of the sum required in crushing the quartz and otherwise working the mine. The total length of this adit, I think, 1750 feet and of this 500 feet have already been driven. A contract has been let for 300 feet more, and as far as we can judge, assuming that the ground is fairly easily drivable, it will take about one year more to complete the low level adit. In the meantime, our tramway and reduction works are in perfect order, and ready, the moment we strike a reef, to get quartz out and to commence crushing. Having gone already about 500 feet, it is very possible that at any time now we may come across a good reef. I do not know that I can tell you any more about the Tipperary property which will be of interest to you. Of course, we are in the initial and proving stage of the lower levels at the present moment. As soon as there is anything very definite to report we shall have pleasure in laying it before you. Now we come to the second part of the subject—the Argentine property. You are aware that we there hold a very large area of country with mining rights, and that we worked upon the Carolina Mine for a considerable time. It was once exceedingly profitable, and showed very good returns. We went up to 500 ounces a month, with 10 heads of stamps, and I was exceedingly sorry, having visited this place twice, to find that the reef was gradually falling off in depth, until at last it so far pinched out that I think we got down to only 2 dwts. per ton, having received a yield some time after a start was made of about 2 ounces per ton. This, of course, we could neither foresee nor help. But we have very valuable machinery there; we have certain concessions, and we have miners' houses, reduction works, and mining plant, and we have been approached by various persons with the view of taking over and trying to work this property *de novo*. It is hardly worth while mentioning two of them; for one offer, though fairly good, was somewhat vague, while the second came from a distance. The third one seemed to embrace more what we wanted, but I must tell you, gentlemen, that it has not been without considerable trouble, anxiety, thought, and consideration that, subject to your approval, we have thought fit to accept the proposal we are now putting before you. We had several negotiations and certain offers; but I am reminded here of a little incident where a friend of mine had a house to let. Someone asked him what he was wanting for that house, and he named the figure, whereupon the other party said, "Well, sir, I think you are asking a very high price for it." "Well, replied my friend, "if I did not ask it, I should be sure not to get it." In the same way, by degrees, we have obtained, not an unreasonable price nor an unreasonable offer, but such an offer as we think fairly justifies itself in being placed before you, and which we, as directors, are of opinion it would be wise of you to accept. The reason we left the Argentine property was because we had not money enough to prospect there and carry out the works over such a large area of country. Well, if you do not do something there, in the course of time your property will lapse, and it becomes open to anybody to work it or do pretty well what they like with it. But, at present, we have certain rights there which we are very anxious to maintain. We have no money to work this property, and, therefore, we think it advisable that if anyone wishes to come forward and work it, we are bound to accept such a proposal in your interests, and I trust you will see fit to accept this proposition. The agreement now lies on the table, and can be seen by anybody who wishes to go into the matter. I do not know that it is requisite for me to read it, as, I presume, you have all seen our circular. If there are any questions of detail that anyone chooses to ask, we shall do our best to answer them. I beg to move this resolution:—

Resolved, that the draft agreement submitted to the meeting, and initiated by the Chairman and directors for the purpose of identification, between this company and the San Luis Mining Syndicate (Limited), be, and is hereby approved, with such modification as the directors may deem expedient.

Mr. W. PAIRLEY seconded the motion.

A SHAREHOLDER enquired what was the value of the shares in the new syndicate, and whether the syndicate was to be relied upon. Mr. JONES did not think it would be well that the name of the syndicate should be given, but he presumed that arrangements would be made in the agreement for ensuring that certain duties should be carried out, and that a certain capital should be forthcoming. The matter might safely be left in the hands of the directors to guard the interests of the company.

Mr. VINS spoke at some length in support of the proposal of the directors, and urged that full discretion should be given to the board in the matter.

A SHAREHOLDER enquired what the board proposed to do with the 50,000 shares.

The CHAIRMAN said the board had been discussing the matter, but they would prefer to consider it a little further before finally pronouncing upon it. The shares were two shilling shares, and limited. The directors had every confidence in the bona fides of the syndicate, and in their ability to carry out their obligations.

Mr. TAVENOR said the shareholders might care to hear something from him, as he knew the country well, and was able to assure the meeting that in New Zealand the local people looked upon the Tipperary Mine as being one of great promise. Already it had yielded a large return in gold, close upon £60,000 having been extracted from it. During his visit he was accompanied by two very expert miners, and from what he saw and heard, he was fully of opinion that if the property were developed it could be turned to advantage. During last year Mr. Stanford, a mining engineer, was dispatched from this country to take charge of the mines, and on he wrote home most eulogising letters, holding out the greatest amount of hope; but experience had shown that, whatever high done before the results could be of value. By cross cutting and extending the adit into the mountain it was thought a rich shoot of stone had been a kind of upheaval, and the ore body was dislocated; therefore, in place of coming upon a rich body of ore which would have given the company £20,000 or £30,000 in cash, Mr. Beal reported that it was necessary to go through this convulsion of Nature report last November, there was no reason whatever to think of anything but the most favourable outlook when the disturbance should have been cut through. Mr. Beal went on to say that his opinion of the Tipperary Mine was unchanged, and that further operations would be amply repaid. Now, never have made such observations if he could not have justified them. Some 400 feet underneath the cliff a tunnel had been started, and when it should have been driven another 500 or 600 feet, it

was anticipated that the drainage from the mine would be most admirably arranged, and that the water which now drifted into the deep levels and rendered it difficult to work, would all become absorbed. Practically, then, the company would be in a position to work the mine at very little cost, and if anything over 4 dwts. in value should be obtained that would be a payable return. At the same time, any week or month, or even day, might bring a cable-gram from the other side saying that a rich body of ore had been struck in the deep adit. The new arrangement which the shareholders had just confirmed was one which was intended to allow another company, over which the West Argentine had no control beyond its interest, to find some £15,000 for the purpose of exploiting their Argentine possessions. The new company would give this company 50,000 fully paid up shares out of its capital of £25,000, in 250,000 shares of 2s. each. Each shareholder in the Argentine Company had the right to apply for one share; but if the shareholders did not care to subscribe they could reserve themselves for what the 50,000 shares belonging to the company would bring forth. The shareholders would be glad to know that they would participate not only in what the Tipperary Mine would bring forth, but in what the Argentine Company might do. But that was not all, for after 15 per cent. in dividends should have been paid to the shareholders of the new company, the West Argentine would get a further 10 per cent. of all future profits. In conclusion, the speaker thought the shareholders were to be congratulated on the deal that had been made, as they now had two strings to their bow.

Mr. VINS proposed a vote of thanks to Mr. Hopwood, and to the directors for their trouble in the matter.

Mr. JONES seconded the motion. Having looked at the map, he quite agreed that there might very likely come a telegram stating that a rich reef had been cut.

The motion was cordially adopted, and with a word of acknowledgment from the Chairman, the meeting terminated.

UNITED MEXICAN MINING COMPANY (LIMITED).—The ordinary general meeting of the United Mexican Mining Company (Limited) was held yesterday at Winchester House. The Chairman, Mr. John Grove Johnson, in moving the adoption of the report and accounts, expressed regret that there were no dividends, a fact attributable to the very low price of silver, which had dropped to such a figure that it took a remittance of half as much again from the other side to cover the payments due upon the debenture interest than at the time when the previous dividends had been paid. The results of the El Cubo property for the year had been very satisfactory. In fact, that alone had paid 20 per cent. upon the capital expended in it. Unfortunately, however, or fortunately, as the issue might prove, they had also the San Cayetano property, which they naturally did not like to lose, and so continued working it in the hope that it would turn out well in the future. Some satisfactory developments which had been made during the year seemed to justify that hope. The Chairman, in conclusion, referred to a proposal for the acquisition of a copper property, suggesting that the matter should be considered after the report and accounts had been adopted. Mr. Lane spoke strongly against the proposal, and moved an amendment to the effect that the report and accounts should be received, but not adopted. Mr. Allen seconded the amendment, which was carried by 10 to 2. The Chairman assured the meeting that the board did not propose to deal officially with the matter upon that occasion. They simply desired to gather the general sense of the meeting as to the proposal. If there were a strong feeling among the shareholders against it the directors would simply drop the idea. Under no circumstances would the board think of embarking in the scheme without calling an extraordinary general meeting of the shareholders to consider the matter. Mr. Runge, one of the directors, said there was such a strong feeling of dissent upon the board as to the proposal to acquire the property, that there was no possibility of anything having been put into the report with the idea of binding the meeting to approve of the idea. The amendment was then, with the consent of the meeting revoked, and the original resolution for the adoption of the report and accounts carried unanimously. An informal discussion then took place upon the proposal to acquire and work the Santa Rosalia del Carmen Copper Mines. Mr. Allen spoke against the idea, contending that the new property was too far away from the present property to enable the two to be carried on under the same management. The Chairman said the distance between the two properties was some 200 miles by land and 70 miles by sea. This certainly implied that there would have to be two establishments. There appeared to be a strong feeling among the shareholders against the proposal, and that would influence the board very much. The Chairman then took the sense of the meeting on the proposal, when a large majority declared against it.

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

MR. SAMUEL JOHN DAVEY, Dealer in Cornish Mine Shares, Redruth, Cornwall, reports under date of May 3 (4 o'clock) as follows:—Market has been firm most of the week, but dealing has been very slow. Dolcoath advanced 27, Carn Brea 3, Tincroft 3, and Wheal Grenville 1 1/2. To-day market is quiet. Following are quotations:—Carn Brea, 11 to 11 1/2; Cook's Kitchen, 3 to 1; Dolcoath, 76 to 78; East Pool, 11 to 11 1/2; Killfret, 23 1/2 to 23 3/4; South Conduff, 2 to 2 1/2; South Crofty, 2 1/2 to 3 1/2; South Wheal Frances, 1 1/2 to 1 3/4; Tincroft, 12 1/2 to 13 1/2; West Frances, 2 1/2 to 2 3/4; West Kitty, 6 1/2 to 7 1/2; Wheal Agar, 2 1/2 to 2 3/4; Wheal Basset, 3 to 3 1/2; Wheal Grenville, 17 to 18; Wheal Kitty (St. Agnes), 6s. to 6s. 6d.; Polberro, 1 to 1 1/2.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes (May 3) as follows:—The mining market is firmer for most of the leading shares, and prices have improved on the advance of the tin standard and favourable result of statistics for the past month, showing a considerable reduction of stocks with the probability of a further rise. The following are closing prices:—Blue Hills, 1/2 to 3/4; Carn Brea, 11 to 11 1/2; Cook's Kitchen, 1 to 1 1/2; Devon Consols, 18s. 6d. to 20s.; Dolcoath, 77 to 77 1/2; East Pool, 10 1/2 to 11; Killfret, 3 1/2 to 3 3/4; Phoenix, 11 to 12; South Crofty, 2 1/2 to 3; South Frances, 1 1/2 to 1 3/4; Tincroft, 12 1/2 to 13; West Frances, 2 1/2 to 2 3/4; West Kitty, 6 1/2 to 7 1/2; Wheal Agar, 2 1/2 to 2 3/4; Wheal Basset, 3 1/2 to 3 3/4; Wheal Grenville, c.d., 17 to 17 1/2; Wheal Kitty, 1/2 to 3/4.

Messrs. ABBOTT AND WICKETT, Stock and Share Brokers, and Mining Share Dealers, Redruth, write under date of Thursday, May 3:—A moderate business has been done during the past week, and prices in many instances have advanced. Dolcoath has been firmer, and there has been a fair demand for Carn Brea, Tincroft, and Killfret. Closing quotations herewith (four o'clock):—Carn Brea, 10 1/2 to 11 1/2; Cook's Kitchen, 3/4 to 1; Dolcoath, 76 to 78; East Pool, 10 1/2 to 11 1/2; Killfret, 3 1/2 to 3 3/4; Phoenix, 1/2 to 3/4; Polberro, 1 to 1 1/2; South Conduff, 2 to 2 1/2; South Crofty, 2 1/2 to 3 1/2; South Frances, 1 1/2 to 1 3/4; Tincroft, 12 1/2 to 13; West Frances, 2 to 2 1/2; West Kitty, 6 1/2 to 7; Wheal Agar, 2 1/2 to 3; Wheal Basset, 2 1/2 to 3 1/2; Wheal Grenville, 17 to 18; Wheal Kitty, 1/2 to 3/4. Tin, 72 1/2.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAKER, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write, May 3, 1894 (noon):—The past week furnishes few changes of much moment. Home Rail

provide the chief movements both in individual alteration and generally. Herein Metropolitan District are 1/2, and South Eastern Deferred 1/2 lower, but all the rest, where varied at all, are better. Great Northern A are 3/4; Caledonian, undivided, 1 1/2; ditto, Deferred, 1 1/2; Berwick, 1 1/2; North Western, 1 1/2; Midland, 1; and Great Western, 3/4; besides several others fractionally higher. Americans have oscillated within somewhat narrow limits, and change on the week are mostly to lower prices. The declines are only noteworthy, however, in the following cases, viz.: Reading, 1 1/2; Union Pacific, 1; Erie, 1/2 to 3/4; and Louisville 3/4; the rest being described by very small fractions. Exceptions are found in Atchison Income, which are 1/2, New York Central 1/2, and Norfolk Preference 3/4, these being hardly worth noting, save for their exceptional position. Canadians almost unmoved. Pacifics are 1/2, and Trunk Guaranteed 1/2 lower, but for all the rest of the Trunk issues last week figures are not varied. In Mexican Rails decline of 1/2 in First Preference and rise of 1/2 in Second Preference are all the changes to be noted for the week. Consols exhibit no change. Colonial Government Bonds, &c., show Queensland Inscribed 1/2 up, whilst Natal Inscribed are 1, and New South Wales Inscribed 1/2 lower. Home Corporation Stocks, &c., show only advances, but these are few. They are as follows:—viz.: Birmingham Three and a-half per Cent., Bradford Four per Cent., and Leeds Four per Cent. each 1/2 better. Foreigners have not moved much. Higher: Brazilian Four and a-half per Cent. 2, ditto Four per Cent. 1 1/2; Argentine Six per Cent. 1/2, ditto Five per Cent. 1/2; Egyptian United 1/2, Mexican Six per Cent. 1/2, and Turkish Group IV. 1/2. Lower: Spanish 1/2, and Turkish (1864) 1/2. What with general dullness and the closed day of Tuesday, the aggregate of transactions for the week is but a poor one. What business has been done was for the most part done on Friday last, since which day business has been very straggling, though yesterday apparently bore some of the burden of what should have been done on Tuesday if markets had been open. Notwithstanding that transactions are meagre, prices generally throughout the several sections of the market are fairly maintained (except in cotton spinning shares), though in the purely miscellaneous class the record is comparatively an irregular one.

BANKS little doing, and few changes confined to 1/2 on either side with favourable numerical balance.

INSURANCE.—Dealings quite solitary, save for a few repetitions in Manchester Fires and Palatines. Prices, however, have received some attention, and where changes are marked, they are all in favour of holders. Higher: Commercial Union, 1/2; Lancashire, 1-16; Royal, 1/2; Liverpool, London, and Globe, 1/2; London and Lancashire, 1/2; Ocean Marine, 1/2; and Palatine, 1/2 to 3-16.

COAL, IRON, &c.—Solitary dealings in one or two Bolckow issues; all these marked as done. Ebbw Vale are a further 1/2 up; Bolckows fully paid ordinary 1/2, and Richard Evans A 1 1/2 lower, these being all the variations to report.

MINES.—Rio Tintos have been done a few times at declining prices. These mark fall of 11-16ths, and Masons are 1/2, and Burma Ruby 1-16th lower. De Beers are 1/2, and Consolidated Gold Fields 1-16th to 1/8 higher.

COTTON SPINNING shares still stagnant, hardly anything doing and that little at reductions from last prices realised on business. It is only in the very front rank concerns where any approach to steadiness in current prices is to be found.

BREWERIES.—Allsopp's are 1/2 down, but Guinness are 1, and Farnham 1/2 higher. Locals furnish neither transactions or changes in nominal quotations.

MISCELLANEOUS.—Brunner Monde have had a little bustle, and on balance the £2 1/2 paid are 1/2 up, but the fully paid are 1/2 lower. Salt Unions have recovered their recent set-back, getting up to 5 again. Manchester Corn Exchange is a further 1/2 higher, and Chafwick's Suez Canal 1/2 up. Ship Canals have gone quite dead as regards business, but prices of a week ago are fully maintained.

LATER (4 p.m.)—Home rails generally have lost a little of their recent advance, but Great Northern are an exception. Canadians and Americans dull, but prices are fairly maintained, what declines there are marked being very slight in amount. Mexicans are the turn harder. Ship Canals, without business, are about the same, the Ordinary unchanged, but Preference just a trifle easier, but only a trifle.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (May 3), writes:—During the past week the market has been firm on improving trade prospects and the easy state of the money market. The dropping state of the metal markets has, however, been against some of the shares, especially those of copper concerns.

In shares of coal, iron, and steel companies the principal business has been in Steel Company of Scotland shares, which improved to 66s. on trade prospects, but are now about 64s. 3d. Marbella are unaltered at 58s. to 60s., but the output for last month has been 1027 tons. Bolckow Vaughan are at 10 1/2; Ebbw Vale, 9 1/2; Niddrie, 51s. 6d.; Stewart and Clydesdale, 8 1/2; and Wilsons and Clyde Coal, 8 1/2.

In shares of copper concerns prices are easier, in sympathy with the market for the metal. Tharsis has declined to 90s. ex dividend, and Tinto from 15 1/2 to 14 7-16. Arizona and Mason unaltered.

In shares of gold and silver mines a fair amount of business has been done, and prices are generally better, in anticipation of good crushing returns for last month. Montana have declined from 5s. 9d. to 5s. Lisbon-Berlyn steady, in expectation of a favourable clean up. Day Dawn Block firmer, on rumoured improvement at the mine. Victoria and Altamira 1st Preference shares offered. African Gold Recovery are at 29s. 3d.; American Belle, 2s.; British South Africa Chartered, 34s. 6d.; Broken Hill Proprietary, 52s.; Blue Spur, 1s.; Consolidated Gold Fields of South Africa, 50s. 6d.; Champion Reef, 77s.; Cassel, 17s. 6d.; Exceior Estates, 3s. 6d.; Gold Fields of Mysore, 22s. 6d.; May Consolidated, 10s. 9d.; Mexican Gold and Silver Recovery, 12s.; New Virginia Transvaal, 3s. 3d.; Nouveau Monde, 3d.; Oregum, 95s. 6d.; Orita, 2s. 6d.; Sunburst, 6d. to 1s.; and Willoughby's Mashonaland, 25s. to 27s. 6d.

In shares of miscellaneous companies there has not been much business doing. The dividend on Nobel's Dynamite Trust is announced at 10 per cent. The first of the oil companies to announce the result of last year's working has been the Broxburn, which shows the gross profits were £25,564, or about double those for the previous year. After paying dividend on the Preference shares, £6000, the remainder of the profit, is written off or carried forward, so that the Ordinary shares get no dividend. It is expected both Parneston and Young's Paraffin will also show profits, but not sufficient to pay dividends. Field's Candle shares are at 5 1/2. Lawe's Chemical 6 1/2, Roburite Explosives 30s., and White Lead, 5s. 6d.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69 Hanover-street, Edinburgh, report as follows under date of May 3. The railway market has been firm. Caledonian has risen from 125 1/2 to 126, the Deferred Converted from 45 to 45 13-16, the Deferred, &c., 1 from 63s. to 71s. 6d., Glasgow and South Western from 104 1/2 to 105, Great North of Scotland from 91 to 92, Highland from 111 1/2 to 112, Midland from 153 1/2 to 154 1/2, North Eastern from 163 to 164. Canadians and Americans slightly weaker. National Bank shares have risen from 330 to 331, British Linen from 379 to 382, Royal from 229 1/2 to 230. In Insurance shares, North British and Mercantile have improved from 33 1/2 to 35, Commercial Union from 31 1/2 to 31 3/4, Liverpool, London, and Globe from 46 1-16 to 46 1/2, Standard from 57 to 57 1/2, Scottish Union and National A from 79s. to 80s. Northern have risen from 63 1/2 to 63 3/4. Caledonian have receded from 29 1/2 to 29 1/4, British and Foreign Marine from 23 1-16 to 22 3-16, Scottish Life from 32s. to 31s., Northern Investment of New Zealand from 18s. 3d. to 19s. Scottish American Investment have declined from 77s. to 75s., Scottish Reversionary from 7 1/2 to 7 1/4. Steel Company shares have risen from 59s. 6d. to 65s. 6d. Tharsis have fallen from 95s. to 90s. 3d. Coats are 5s. higher at 17. Distillers 1s. 3d. higher at 15 7-16.

NICKEL: ITS HISTORY, USES, AND DISTRIBUTION.*

By A. G. CHARLETON, A.R.S.M.

History and Uses.

THE subject of this paper is one which the author begs leave to present, thinking that it may be profitably considered. His own interest was awakened in nickel, some years ago, when making an inspection of an important group of nickel mines, and the works connected with them, in Germany, but the superior attractions of gold and silver mining have prevented him till now from reviving it. The discovery that nickel was a new element was made by Cronstedt in 1751, and he named it after the mineral kupfer-nickel, in which it was discovered by him, but it was reserved to Bergman in 1779 to show that nickel was really a new metal. Kupfer-nickel was described by Hume in 1694, and its name indicates the low value set upon such ore by the German miners in those days. Kupfer-nickel, in fact, might be freely translated into English as "Old Nick's copper," the term nickel being probably derived from the Low German "nikker," which stands for the devil or hangman. Austin traces

Four Marked Stages of Development

in the modern history of nickel.

1st. The century or more when the presence of some unusual metallic combination was recognised to exist in certain minerals, during which time the metal was introduced into the arts as an alloy known as "white copper," consisting chiefly of copper and nickel with a small proportion of zinc, closely resembling silver, tough, easily worked, and not tarnishable when exposed to gases containing sulphuretted hydrogen.

2nd. The period which commenced with the manufacture of German silver on a large scale at Berlin (about the year 1824) when nickel obtained a recognised position, Brandes having shown the year previous the exact composition of the new alloy.

3rd. The period which dates about 1850, when Switzerland adopted nickel for subsidiary coins, marks another era in the history of the metal. In 1858 it was first successfully alloyed with steel on a scale of commercial importance, and this has given nickel a fourth periodic impulse, which has only just practically commenced, and promises to far exceed all the preceding ones in its results. The world's production of metallic nickel has increased within the past 10 years from 1000 tons per annum to over 5000 tons, whilst previous to 1876 not more than 600 tons were produced in any one year. As far as our knowledge at present extends, the principal value of nickel seems to lie in the properties of its alloys.

In 1804 Richter had succeeded in producing malleable nickel, but subsequent investigations met with very variable results, through neglect in recognising the important part played by small quantities of impurities alloyed with the metal.

A New Future for Nickel

As a metal, apart from its alloys, dawned when in 1879 Fleitmann found that by the introduction of small amounts of magnesium just before pouring, the quality of the nickel was improved; Garnier subsequently accomplishing the same end by the use of phosphorus-nickel. This third period is likewise marked by the important event of the discovery in 1876 of immense quantities of hydrated silicates of nickel and magnesium (garnierite) in New Caledonia, which placed an exceedingly valuable material at the disposal of manufacturers, opening up the possibility of producing a purer nickel from ores free from the usually accompanying deleterious substances, reducing the price of the metal, and extending its uses. Nickel ores had been discovered in the island some years previously, but it was not until 1876 that they began to influence the market. These new ores contained the nickel in the form of protoxide, free from cobalt, copper, sulphur, and arsenic, and, consequently, required an entirely different system of treatment from that by which the sulphide and sulpho-arsenide ores have been handled.

The Pacific Coast mines are said to be the most promising deposits at present known to exist within the boundaries of the United States, but distance from market, and the discovery of nickel in Canada, have militated against their development.

In 1856 Mr. Alex. Murray pointed out the occurrence of a dingy green magnetic "trap" at a point 10 miles south west of what is known as

Sudbury, in Canada,

and this rock, upon analysis, showed small quantities of nickel and copper.

The first discoveries of any commercial importance were not made until the building of the Canadian Pacific Railway in 1883, and early in 1884, when a cutting on the line pierced a small hill about 3½ miles south west of Sudbury, exposing the deposit since known as the Murray Mine.

Though there has been no material increase in the established channels of consumption except it be for plating, whilst 1000 tons of nickel flooded the market in the early years of the century, 10,367,275 lbs., or, roughly, five times as much, was produced in 1891, consequently the large excess of metal produced must have gone into nickel steel, yet this alloy has scarcely begun to be used in the arts of peace. As its price tends steadily downward, we may confidently expect that it will eventually enter into competition with other materials for other purposes than armour plates and guns.

The Distribution of Nickel.

Geologically, nickel ores are usually divided into three main groups, which broadly correspond with the following classification. Vogt has employed this subdivision as a foundation for a genetic classification. His groups are:—

(1.) Arsenides, which include sulpho-arsenides and sulpho-antimonides, as well as combinations of the metal, with sulphur and bismuth. (2.) Sulphides, such as nickeliferous-pyrrhotite and pyrites, millerite, &c. (3.) Silicates, garnierite, genthite, &c.

A brief description of a few typical examples of each group is interesting, as throwing light on the general occurrence of the ores of this metal. The first of these groups is found in veins in Hungary, of the Dobschau type, and in the so-called Kobaltrücken, typified by the Richelsdorf Bieber veins. They occur also (as subordinate minerals) in the silver bismuth cobalt veins of Schneeberg, in the ordinary silver lead veins of Freiberg, and in the Gem Mine of Fremont, Co. Colorado.

In addition to nickel cobalt ores of various kinds, Von Groddeck shows that the typical Dobschau veins carry copper, and all these three metals are found in the serpentines and older eruptive lime-olivine rocks, which form "the country" of the veins, and appear to have been produced from the decomposition of the adjacent rock masses, composed of olivine and gabbro. A vein of this class is found at Dillenberg in Nassau, in picrite, altered to serpentine, and contains millerite, bismuth glance, pyrites, and other sulphide minerals. This vein was only productive in the serpentine, becoming barren when it passed into the adjoining schist country.

The gabbro in the neighbourhood of Dobschau, which has been partly altered, as before mentioned, to serpentine, is fringed by a peculiar green siliceous schist, resting on gneiss and granite. The veins occur between the gabbro and the schist, do not possess well-defined walls, and often reach a width of 25 feet.

The Schneeberg Deposits,

which likewise belong to this group, have a special interest for me, as I visited the district in the year 1880, and had an opportunity of examining its geological features, although my attention was more particularly directed to a study of the methods of dressing these ores, which present particular features of interest in their details. The veins chiefly occur in mica-schist, which passes into clay-slate, more rarely entering

the deep seated underlying granite, which, along with basalt, is found in intrusive masses, penetrating the overlying formation in the neighbourhood of Schneeberg. The chief group of nickel cobalt veins lies round Neustädtel, and, in general, strikes from north-west to south-east, the dip being in some cases north-east, in others south-west, but in all cases highly inclined. The gangue is called by Von Cotta hornstone, and they carry in addition to nickel and cobalt, bismuth, copper, pyrites, and silver. He considers them to be veins of infiltration, formed by percolating mineral waters.

Closely connected with this system of veins is an independent group of copper lodes, which strike north-east and south-west, with an almost vertical dip to the north-west. These show a great variety of copper and other minerals, amongst which may be named copper pyrites, borite, copper-glance, tetrahedrite, cuprite, tenorite, chrysocolla, malachite, azurite, galena, cuprous sulphur of lead, cerussite, pyromorphite, iron and arsenical pyrites, blende, native silver, jasper alophone, diopside, barytes, and brown-spar, a veritable mineralogical museum. The nickel-cobalt ores as they are delivered to the dressing works average, I was told, 4 to 6 per cent. of cobalt, 3 per cent. of nickel, and 8 to 10 per cent. of bismuth.

The Second or Sulphide Group

of nickel deposits embraces those of Sudbury, Ertal, Piedmont, Varallo, and other places, and possesses very wide distribution, and marked geological characteristics. Vogt assumes this class of deposits is usually formed by a process of differentiation, or segregation from a basic eruptive rock magma, and they are distinguished by the peculiarity that the ore chiefly consists of pyrrhotite, which carrier, disseminated through its substance, various nickeliferous sulphide minerals, such as millerite, polydymite, and pentlandite, whilst chalcopryrite and titaniferous iron usually accompany the iron pyrites as accessory minerals. The largest and best known deposits of this class are at Sudbury, in Canada, where the ore is found in irregular, lenticular masses in the Huronian rocks, apparently conformable to the planes of bedding, and invariably in proximity to dykes or uplifted sheets of greenstones (diorite) and diabase. From the fact that the greenstones themselves are found at times with ore disseminated through them, Merritt thinks the nickel has been brought to the surface by the agency of these dykes. The region has been much faulted, and in places the pyrrhotite and chalcopryrite form a breccia in a dark dioritic matrix.

As far as

The Sudbury Deposits

have been exploited, down to a depth of 600 feet, there is no sign of falling off in the grade or quality of the ore. It contains in bulk 1 per cent. to about 5 per cent. Ni., and 1 per cent. to 4 per cent. Co. and cobalt; traces of gold and silver; and platinum, in the rare form of sperrylite (arsenide of platinum), is found in it.

In the Gap Mine of Lancaster Co., Pennsylvania, we have another example of a nickel-sulphide ore consisting of millerite associated with pyrrhotite, impregnating a lenticular mass of hornblende rock, embedded in mica schist at or near their planes of contact. It has been suggested that this horn-blende mass may prove to be an altered eruptive, whilst it is not unlikely that an adjoining trap dyke had some influence in the formation of the ore body. According to Blake, the ore runs 1.5 to 2 per cent., whilst Whorton averages it from a series of his analyses at 3.6 per cent. Ni. and Co. and 0.75 per cent. Cu. For a third example we may turn to the Norwegian pyrrhotite deposits, in which the ore occurs chiefly at the contact of the eruptive rocks (massive gabbros) with the archaic country schists.

The third or silicate group of nickel deposits are best represented by those of New Caledonia, which have been described recently in a paper read by Mr. J. Garland before the Institute of Mining and Metallurgy, and by other writers. Mons. Heurteau, I believe, made a detailed geological survey of the island in 1873, which led to mining operations being commenced. The base of New Caledonia seems to consist of a light-coloured non-fossiliferous schistose rock, on which secondary and tertiary rocks rest, and about one-third of its area appears to be covered by massive serpentines, which are most prominent in the east and south-east parts of the island.

According to Mons. David Levat (study of the deposits of Ni., Co., and Cu. in New Caledonia, Association Française pour l'avancement des Sciences, Paris, 1887), the nickel occurs solely in the form of magnesium hydrated silicates of a beautiful apple green colour when pure, as coatings or concretions, in the fissures of the serpentine; and he concludes, from the absence of arsenides or sulphides of nickel, that their mode of occurrence points to the denosition of the ore from solution in the state in which it is now found.

The Pure Mineral.

he reckons, often averages 26 per cent. Ni., but the average ore, after sorting, does not carry over 10 per cent. mixed with some serpentine gangue. Garland puts the average quality of the ore shipped to Europe at only 7 to 8 per cent. of metallic nickel, stating that ore of less than 6 per cent. is considered unmarketable, and cannot be sold. The darker green, the colour of the silicates, the richer the ore seems to be, some specimens appearing to shade off into almost pure silicate of magnesia, which are almost white, containing only traces of nickel.

This green silicate is not, however, the only form in which nickel ore occurs in the district, as most valuable deposits are found of a brown mineral, of nearly the same composition, which Mr. Garland states is generally the richer of the two. It seems to consist of green silicate, in which part of the magnesia is replaced by hydrated oxide of iron (limonite) which gives it this brown colour. Treated with dilute hydrochloric acid, the iron is dissolved out, leaving the green mineral garnierite, which shows that the iron is not chemically combined, but merely mechanically associated with it. The deeper brown it is, the richer the ore is reported to be. This is remarkable, and points again to the fact before remarked, that association with iron appears to affect the nickel contents of the ore in a favourable way. This brown ore has a very light specific gravity, only 3.00, and Claudet gives an analysis of it as follows:—

| | |
|------------------------------------|-----------------|
| Oxide of nickel..... | 12.25 per cent. |
| (=nickel 9.64 per cent.) | |
| Oxide of iron | 32.20 " |
| Magnesia | 3.07 " |
| Alumina | 3.62 " |
| Silica | 34.80 " |
| Water at 212 degrees Fahr. | 6.43 " |
| Water above 212 degrees Fahr. | 7.07 " |
| | 99.44 |

The percentage composition of both the green and brown minerals varies greatly, and the above analysis may be presumed to be below the average, as Garland states that omitting minor constituents, the average of 12 analyses of the green garnierite made by Professor Liversidge show SiO₂ 44.75, NiO 19.73, MgO 15.25, and the Government Year Book for 1891 states that the richer mineral has sometimes the following composition:—Silica 45, nickel 26, magnesium 13, iron 3, water 13.

According to Mr. Ph Argall (quoting, I believe, from official sources), in 1890, the output of nickel and cobalt ore from New Caledonia was 22,690 tons of (say) 10 per cent. nickel ore, and 2200 tons of 3 to 5 per cent. cobalt ore, whilst in 1891 the output of nickel ore had only reached 35,000 tons. Mr. Garland states, on the other hand, that these mines are now producing over 60,000 tons of nickel ore per annum; and to reconcile the two statements, I take it that he alludes to the crude ore. He puts the cost of mining at 6s. to 40s. per ton.

I have some interesting geological sections copied after Levat. Deposits closely approaching in type those just described were discovered in 1881, at Riddles, Douglas Co., Oregon, and others of a similar kind have been found at Webster, North Carolina. The Riddles deposits all lie at or near the surface in beds 4 to 30 feet thick, occurring as a boulder formation, scattered through a ferruginous earth or in beds underlain by serpentine, and associated with chrome iron.

According to S. H. Emmons the nickel deposits of North Carolina are found in veins of three distinct classes—first, those occupying fissures, the strike of which is more or less normal to the planes of division, that give a bedded aspect to the chrysotile rock mass;

second, there are numerous caunter veins, with a strike oblique to the first series; third, there are bedded veins, located in planes of division. He is of opinion that the caunter and bedded veins will not be found very productive, and the first series will alone yield any considerable supply of ore.

A Nickel Iron, Josephinite.

has been lately discovered in the form of pebbles and smooth boulders in considerable abundance in the placer gravels of a stream in Josephine County, Oregon. They are supposed to have been derived from some dyke of ultra-basic rock.

The Genesis of Nickel.

To explain the genesis of this class of ore deposits one must glance for a moment at the sources from whence nickel is derived. Native nickel is found alloyed with iron in meteorites, and also in some ultra-basic lavas, whilst the spectroscopic reveals its presence in the solar atmosphere. It is showered on the surface of our planet in the form of meteorites, those fiery messengers telling of the wreck of other worlds, and testifying to the common origin of the material universe in the form of (1) holosiderites composed entirely of nickel-iron; (2) syssiderites, the nickel-iron of which contains silicates of magnesia and iron protoxide, identical with olivine, and at other times a mineral resembling angite; (3) sporadosiderites, the most common kind, usually crystalline in structure and containing nickel-iron, troilite, chrome-iron, olivine, titanite and phosphoric acids; (4) asiderites, distinguished by the presence of hydro-carbons in which nickel is present as an oxide. Some of them have been shown to contain pyroxene and feldspar (chiefly anorthite), and the absence of quartz and highly silicated feldspars is to be noted. These

Four Classes of Meteorites

show a gradation from almost pure metal containing over 98 per cent. of nickel-iron to a strong mass closely resembling some basic lava.

Now, according to the latest determinations of Mons. Alphonse Berger, *Comptes Rendus*, July, 1893, the density of the earth is about 5.41, whilst, so far as our limited observation extends, that of the crust is about 2.5. Various theories have been advanced to account for this, and some very first-rate authorities have suggested that the heavier metallic elements might possibly be found to predominate in the nucleus, basing their views on widely extended observation of past and present volcanic phenomena.

It has been found that once the acid stage is past, lavas become more basic, and whilst each succeeding flow from any one vent might not be more basic than the preceding one, yet the tendency is in that direction till, finally, ultra basic lavas are extended from the centres of intense and long continued activity. This average order invariably, I believe, holds good everywhere over the earth's surface, provided the volcanic force is long enough active. The ultra-basic rocks have many points of resemblance in composition to some of the meteorites attention has been called to.

Thus dunite is a crystalline granular aggregate of olivine and chrome iron, which passes by alteration into serpentine; we have also picrite, half of which is olivine, associated with hornblende, diallage, and magnetite. Lherzolite is another of these peridotite rocks, consisting of olivine and enstatite, with other accessory minerals. Olivine is the dominant constituent of such rocks, and as a class they possess the highest specific gravity and least oxygen of any known.

The conclusion to be drawn appears to be that the genesis of nickel deposits may, in most instances, be traced to the ultra-basic rocks, and their derivations, serpentines, and magnesian silicates.

The Great Nickel Deposits

of the world are found in rock in which olivine is the predominant mineral, whilst we have seen that olivine and the magnesian silicates are found not only in the ultra-basic rocks of the earth, but also in meteorites. Whilst these facts alone do not prove that the nickel was derived from the olivine, it is well to note the conditions under which the olivine was formed, and to see how far it is nickeliferous. Assuming a semi-metallic nucleus for the earth, and that in this nucleus iron and nickel are the predominant metals, as they are in meteorites, and allowing that the ultra-basic rocks came from the greatest depths in the earth's interior, under such circumstances, it would not be remarkable for silicates, crystallising out of the magma, to contain such metals.

From the microscopic study of the igneous rocks, much light has been thrown on the order of crystallisation of their component minerals, which has pretty definitely been proved to be fairly uniform. Thus the first minerals to form appear to be magnetite and ilmenite, sometimes chromite and pliotite. Next come silicates, which occur in minute quantities, such as zircon and titanite, pyrite and pyrrhotine usually follow; and next after the metallic oxides and sulphides, and the heavy, dark-coloured basic silicates, olivine, augite, and hornblende. Olivine is the first of the rock forming silicates to crystallise out of the basic magma. According to "Rutley," p. 117, olivine sometimes contains traces of titanite, phosphoric, and chromic acids, and the protoxides of nickel and cobalt.

A review of the foregoing facts certainly points to the conclusion that the nickel, at least of the serpentineous deposits, has been derived from the basic magnesian silicates of the original rock masses. As regards

The Nickeliferous Pyrrhotite Deposits,

they may possibly have a different origin, as suggested by Vogt. It has been proved that workable deposits of titaniferous iron have been probably formed in certain basic eruptives in Norway and Sweden, by a process of differentiation or segregation of the iron ore to the centre of the eruptive mass; and Vogt has suggested, and endeavoured to apply, the same theory, to account for the formation of the nickel sulphide deposits in the norities of Norway and Sweden and the Huronian deposits of Canada. As against this theory it is remarked that the pyrrhotite deposits referred to occur along the contact planes of the gneiss and schist; and, therefore, if they were formed by segregation from a molten magma, this process has taken place from the centre towards the outside, or in reverse order to that which characterises the iron ore and the supposed structure of the interior of our globe.

Though there may be grounds for further investigation in this direction, these ore bodies would seem more probably to have been deposited from circulating mineral waters. Some geologists explain the presence of deposits of mineral, by supposing them to have been formed by the agency of circulating solutions bringing them to the surface from unknown depths, disregarding the fact that fissures have never yet been proved to have indefinite extension, nor can water circulate below certain limits. Before, therefore, adopting an ascension theory for the formation of nickel deposits in basic eruptives, it is well to recollect that these rocks came from greater depths within the earth than circulating water is likely to have penetrated; much deeper in all probability than any vein fissure could have extended to. It is more rational, it seems to me, to suppose that the metals were brought within reach of surface agencies, and it is probably owing to the subsequent leaching of these basic eruptives that our principal deposits of nickel were placed at the disposal of the miner's pick. The practical lesson to be gathered from this, I think, that the "prospector," looking for new deposits of this class, will best turn his attention to a field where rocks of this character are met with.

WILLOUGHBY'S MASHONALAND SYNDICATE.—We learn that in a letter from Sir John Willoughby, dated from Bulawayo, 24th March, giving particulars of a new property he has acquired for the syndicate, he states that on the Dunraven reef, on which 40 claims have been located, there is an outcrop alongside the old workings, traceable throughout 30 claims, of from 4 to 5 feet wide, which has not been touched by the ancients. Rich pinnings have been obtained throughout the length of the outcrop. Sir John has seen pinnings which showed 10 to 15 ounces. The reef is situated on a hill, so that working will be very cheap, and by driving it will be possible to get 300 feet of back, which should give at a low estimate over 40,000 tons of what the ancients have left before reaching water level, without counting whatever extent of reef there may be below the old working. There is no visible gold in the rock, and yet the gold is distributed throughout, both fine and heavy.

* Summary of a paper read before the Society of Arts, on Wednesday, at which Professor C. Le Neve Foster, D.Sc., F.R.S., presided.

THE EDITOR'S LETTER BOX.

We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.

THE METALLURGY OF LEAD.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR—As Hannay* has ventured to promulgate his theories on the metallurgy of lead, perhaps you will consider the following statements of Dr. Percy as a reply thereto.

1. The relations of lead and sulphur: Dr. Percy remarks on his experiments in melting lead and sulphide of lead together in all proportions, that if "cooling takes place slowly the mass will be found to consist of soft, malleable, and comparatively pure lead at the bottom, and of hard crystalline sulphide of lead at the top." And he concludes, "experiments of this kind made on a small scale in crucibles are apt to lead to erroneous conclusions."

2. Specific gravity of lead and sulphide: Hannay states the specific gravity of lead to be 7.585, the same as Dr. Percy.

3. Methods of Analysis: Dr. Percy says that "several methods have been proposed for the estimation of lead by means of standard solutions, but so far as we are aware, none have been successfully applied in the assaying of ores of lead. They either fail in requiring too much expenditure of time, from inaccuracy of the method, from interference of substances often existing in lead ores, or from other causes." Hannay's methods would not distinguish the various metals found with lead.

4. Furnace Reactions of Lead compounds: Hannay is wrong in stating that " $PbS + PbSO_4 = Pb + 2SO_2$ " is given by Dr. Percy as the whole rational of lead smelting. In describing the special reactions connected with sulphide of lead, about 20 in number, he says in treating of "sulphide of lead heated with sulphate of lead—when the mixture is such that the sulphur and oxygen are in the same ratio as in sulphurous acid, then, on exposure to a strong heat, the whole of the sulphur will be evolved as sulphurous acid, and the whole of the lead reduced to the metallic state: $PbS + PbSO_4 = Pb_2 + 2SO_2$." When the oxygen is just sufficient to form sulphurous acid and protoxide of lead, then the whole of the sulphur will be evolved as sulphurous acid, and the residue will consist wholly of protoxide of lead, and when insufficient the product will consist of lead and protoxide, thus: $PbS + 3PbO, SO_2 = 4PbO + 4SO_2$, and $PbS + 2PbO, SO_2 = Pb + 2PbO + 3SO_2$, &c."

Hannay bristles with formula (not less than 30), but he does not afford information on the furnace reactions of lead compounds. His remark, "otherwise the reaction is correctly expressed," seems generally to apply to his formula, in which all the factors have not been included.

5. Lead Smelting: Hannay says that Dr. Percy assumes that roasting forms sulphate of lead, which reacts with the sulphide of lead to form sulphur dioxide and metallic lead. Dr. Percy, however, states that "the first step (in the air-reduction process) is the roasting of the galena with free access of air, so that it may not clot, and the product may consist of a mixture of protoxide, sulphate, and sulphide of lead in the same ratio as in sulphurous acid. The next step is to raise the temperature sufficiently to cause the reaction between the oxidized compounds of lead so generated and the unchanged sulphide of lead, whereby the whole of the lead may be reduced to the metallic state, while the whole of the sulphur is evolved as sulphurous acid, &c."

Hannay concludes after another formula (30) that the best result obtainable in smelting galena by his process is 66 per cent. of lead.

This, however, is contrary to experience with existing processes. Thus in 1892, 40,024 tons of dressed lead ore produced 29,640 tons of metallic lead, or about 74 per cent. in Great Britain.

6. New Metallurgy of Lead: Hannay's proposed new smelting process consists of blowing air over and through the molten galena, so as to produce as much fume as possible, which is to be sublimed in condensers. He has shown that the produce of lead cannot exceed 66 per cent., when all the fume is recovered, so that it is scarcely probable that it will outstrip the present process, which yields on an average 74 per cent. of metallic lead.

Hannay's proposals will not advance the metallurgy of lead, accompanied as they are with the difficulty of condensing the large volumes of fume produced, the fine division of the products, &c. His process commences with the molten galena, but owing to the refractory nature of sulphide of lead, this cannot be accomplished until it is calcined. The loss of lead by imperfect condensation would be enormous, and instead of being 10 per cent., as at present, would probably exceed 30 per cent. No details are given of the wet condenser, of its cost, or of the means of overcoming the corrosive action of the sulphurous acid upon the materials of which it is composed.—Yours faithfully,
Mayday, 1894. N. N. N.

CHAMP D'OR GOLD MINING COMPANY.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR—On the 14th of April last, through the medium of your paper, I published a letter showing the value of the above property as compared with the New Rietfontein, from actual information in my possession. I think, with your permission, I will make public other facts of considerable interest to shareholders and probable investors. November last the local board at Johannesburg had to compulsorily resign. The state of affairs then were simply this: One of the local banks held a bond on the property for £20,000. The local liabilities were £12,000; added to this the purchase of cyanide plant £2500, and the enlargement of same, £1500, or a grand total of £36,000. This has all been cleared off from gold won from the ground. Last month's profit reached the respectable figure of £8500. This month will exceed even that by a further £1000, and there is no reason why within three months the profits should not be from £9000 to £10,000 monthly. The reefs are 5 feet wide, and the prospects are daily improving. The reserve tailings—being crushed now—is quite equal to the amount that the cyanide plant is able to deal with. The working expenses, all told, are under £5000 per month, and the output for April will be within the vicinity of 3500 ounces, or considerably over £13,000 worth of gold; within six months this company can pay 60 per cent. dividend, and still retain a large balance in hand. In showing these figures, I do so upon reliable and trustworthy information, therefore I may safely say were Champ d'Or shares twice their present market value, there would not then be one mine on the whole of the Rand that would stand comparison. Since my letter of the 14th Champ d'Or have risen in value 50 per cent. Notwithstanding this, shareholders will be very foolish to part with their holding at the present absurdly low price.

* The prefix is omitted as "Hannay" usually alludes to Dr. Percy somewhat curtly as "Percy."

On their merits the shares should rise to 30s., and they would be cheap at that. My Kaffir information is always trustworthy, hence my advice to shareholders to retain their interests. The shares are very scarce, and there is a very powerful buyer in this market trying to pick up all the shares obtainable without making too much show in the market. As for New Rietfontein, I have only to state that the mine is looking worse and worse every day, and the climax is fast approaching. New Kleinfontein want careful watching. This mine is looking splendid, and the returns will be good enough to enable the company to start right away with a dividend of 20 per cent. The shares are scarcely ever quoted, but the good information is kept dark with a view to get shareholders to sell their shares. As the price will rapidly advance during the next few weeks, I hope shareholders will not be caught napping.—Yours faithfully,
61, Gloucester-place, W., May 3. H. BUSH.

NOUVEAU MONDE GOLD MINING COMPANY.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR—Can any of your readers give information respecting the Nouveau Monde Gold Mining Company? Some years since, shareholders in the above were invited to exchange their holdings for the same in the Farryell Creek Gold Mining Company, and a certain proportion assented to this course, but a very considerable number held aloof. The Farryell Creek Company was wound up, and recently I saw an announcement that the Nouveau Monde were prospecting for petroleum somewhere in North America. For many years I have held shares, and am naturally desirous to know if at last smelting is being done.—Yours faithfully,
W. H. FLETCHER (Shareholder).

Chiswick, May 3rd, 1894.

NEW ISSUE.

MAWSON'S "REWARD" CLAIM (LIMITED).

The capital of this company is £60,000, in 60,000 shares of £1 each, of which 40,000 are now offered for public subscription at 5s. per share premium. This company has been formed to acquire—(a) Mawson's "Reward" Claim, which has been granted by the Government of Western Australia as a reward for Messrs. Mawson and Kirkpatrick's discovery of a payable gold field at Dundas, in the same manner as Bayley's "Reward" Claim was granted by the same Government for Messrs. Bayley and Ford's discovery of a payable gold field at Coolgardie. (b) The lease of about 20 acres of land outside and around the said Reward Claim, being a continuation of the reef both north and south. The whole claim, locally known as the May Ball, and amounting to about 26½ acres, is to be acquired by this company. The Dundas Gold Field is the latest discovered gold field in Western Australia, having been proclaimed a public gold field in August, 1893. Mawson's "Reward" Claim is situated about 100 miles south of Coolgardie, and about the same distance from the coast at Esperance Bay.

The claim has been examined and reported on in Western Australia—For the Government by Mr. H. P. Woodward, the Government Geologist, and for the owners by Mr. E. H. Becke, metallurgist, Perth; and Mr. W. H. Angove, A.M.I.C.E., F.R.G.S., Albany.

The following are extracts from the official report of the Government Geologist on the claim:—"The reef is well defined at its outcrop at the southern end of the area running north up to the hill, where it can still be traced at the surface, although smaller in size. It has been opened by two shafts and several small holes, from all of which good gold-bearing stone was obtained. . . . The main shaft at the south end of the claim is 40 feet in depth, showing a wide, defined reef 4 feet in width, carrying gold all the way down. It underlies slightly to the west, and shows all the characters of a true fissure vein. . . . Fine gold is carried all through the stone, besides which there are very rich patches, but in these also the gold is in the solid stone. . . . A few chains north of this shaft is another, which is down about 10 feet, in which there is a very solid body of stone about 5 feet in width, having, if anything, even a better definition than in the main shaft. . . . There are also several spur veins or leaders striking off from the main lode, which also carry gold. This lode is a true fissure vein, and all the indications point to its continuing as rich or becoming richer in depth. . . . Although not phenomenally rich, like Bayley's, this mine is as promising as anything in the colony, and, considering its position, being only 100 miles from the coast, the abundance of salt water and large rainfall, and quantity of timber on the ground, it should be cheaply and successfully worked."

The following are extracts from the report of Mr. E. H. Becke:—"I made a careful inspection of the whole property.

. . . Two shafts have been sunk on the reef; No. 1 is 42 feet in depth, the reef or lode formation is 4 feet 2 inches wide, and the whole body of stone contains gold. . . . No. 2 shaft is distant north of No. 1 shaft, on the rise of the spur, and the stone is undoubtedly rich in fine gold. . . . I may add that there are few reefs in the colony equal to Mawson's, and being a true fissure vein, I have no hesitation in stating that as depth is attained the reef will increase in width and become still richer. . . . I consider Mawson's equal to any mine—in fact, second to none in the Coolgardie Field, Bayley's excepted.

The following are extracts from the report of Mr. W. H. Angove:—"In this claim the reef outcrops, and can be traced through the whole length of the claim. . . . The reef is a true fissure vein, and both hanging and foot walls are clean and well-defined. . . . The reef is a solid body of stone all the way down, and is quite 4 feet wide, carrying gold all through the stone. . . . I have had many years of experience on different fields in Victoria, and have no hesitation in saying that the May Ball Reef of Mawson and Kirkpatrick's is one of the best defined in the colonies, and excepting the celebrated Bayley's Find there is nothing in Western Australia equal to it.

As is generally known, one of the great difficulties with which they are contending in Western Australia is the scarcity of water, but on the Dundas Field this scarcely seems to exist. Both Mr. Becke and Mr. Angove confirm the [Government Geologist's] statement as to there being plenty of water and timber, the former stating that a permanent supply of water could be obtained to keep 50 heads of stamps going day and night. As for transit, the property would appear to be very well off in this respect, Mr. Becke and Mr. Angove agreeing that there will be no difficulty in getting machinery to the mine. In this connection, the latest news received by mail is of interest. It is to the effect that heavy rains have fallen at Esperance Bay and at Fanny's Cove, Dundas Hill, and two Fraser Range. There is a supply of water all through the country, and all the tracks are fit for the use of prospectors. Teams which have been camped during the summer at Esperance Bay and Fanny's Cove are leaving daily for the fields. The contractors have started to cut the new road from Esperance to Dundas Hills.

We have had an opportunity this week of inspecting specimens from the claim, which Mr. Mawson brought over with him. These were exceedingly rich, each specimen showing visible gold.

Our contemporary, the *West Australian Review*, publishes this week an interview with Mr. Mawson, when the follow-

ing history of the discovery is given: "In July, 1892, having had much experience on the other fields, and having had a fair share of luck, these men [Messrs. Dawson and Kirkpatrick] made their way to Dundas Hills. They suffered from want of water and had often to dig trees from the ground and suck the moisture from their roots. Mr. Mawson's emaciated countenance even now tells a tale of hardship and privation, notwithstanding a spell of rest during his voyage and good living in London. Soon after reaching Dundas Hills, the partners were fortunate enough to strike gold, and applied for a reward claim, which was granted to the extent of 6½ acres. After satisfying themselves as to the permanency of the field, they made application for a lease, and became possessed of a property measuring 26½ acres. This they worked for 18 months, getting sufficient gold to pay all expenses, and to comply with labour conditions." Both Mr. Dawson and Mr. Kirkpatrick look upon the Dundas property as one of the most permanent in the colony.

COOLGARDIE.—The directors of the Hampton Lands and Railway, Syndicate (Limited) have received the following from their manager dated Coolgardie, Western Australia, March 16:—"I have sent you off this week a box of stone from the Billycan and from the Ironstone Hill, south-east of Coolgardie, where the common opal was discovered some time ago. I have also enclosed a few common opal stones from selection 42. The box is sent 'care of Messrs. Dalgety and Co., Albany,' same as last. To-day I leave to be forwarded by post one small stone from the Billycan and two stones from a reef I discovered two days ago east-south-east of Townsite about one mile. I am much impressed with the stone, and will open it up on my return from Yindri district. There is not much quartz shown on the surface; but what is lying about contains gold, and may be large when sunk upon. While waiting for the camels my men have been opening up a reef upon the Townsite. There is some very good-looking stone; but all that has been found as yet is one small speck, detected with the glass. We have had a great deal of atmospheric disturbance lately—heavy rains in places, whilst it has all but missed some others. Coolgardie and the Southern Cross road have been fortunate, and for that reason I have to-day sent you a cablegram to say that the tanks were half filled. Many tanks, &c., away from Coolgardie have been filled ten times over. Some creeks have been running perfect bankers; you will see the news in the papers. One tank at Coolgardie is three-quarters filled and the other is about one-third full. There is an abundance of salt water at the bore now. Some sensational reports continue to come in from the new find, Billy-Billy (or Karnalpie). Good reefs have been found. Other reports of rushes further eastward, and about a 36 lb. nugget being found at Hannan's."

THE NORTHERN COALOWNERS AND THE EIGHT HOURS BILL.—A general meeting of the North of England United Coal Trade Association (which includes the coalowners of Northumberland and Durham) was held on Monday to consider the course to be adopted with reference to the further progress of the Mines (Eight Hours) Bill in Parliament. We understand that it was resolved to continue to offer a strenuous opposition to the measure, the consequences of which it is recognised would be disastrous both to the owners and their workmen. A strong committee was appointed for the purpose of pressing the views of the owners on members of Parliament. The meeting also considered how the eight hours day could be applied in this district in the event of the Bill becoming law, and it was, we believe, the unanimous opinion that the only way in which it could be adopted would be by increasing the hours of hewers to eight p.m. day, and that a very large proportion of those now employed would have to be discharged, owing to the impossibility of continuing the present system of working, while a further result would necessarily be a material reduction in the wages of those men and boys who now work over eight hours per day.

REGULATIONS AS TO EXPLORATIONS AND MINE WORKING IN SIAM.—M. Bel, Ingénieur Civil des Mines, communicates to the *Annales des Mines* the following particulars as to the searching for minerals and working mines in Siam:—"Anyone may make exploration throughout one province by paying for a licence, amounting to 40 ticals (or £8) granted for one year and renewable, or by the payment of 80 ticals (£16) for the right of searching exclusively in a determined area. Any finder, in the possession of a permit, may obtain the right to work (with the option of renewal) during 25 years over an area of:—(a) 30 acres for a proved seam situated at a distance of less than five miles from another mine; (b) 80 acres for a new seam in the same zone; and (c) 150 acres for a new seam in another zone. In the case of mineral fuel and iron mines, open workings and quarries, the above areas are increased to 150, 240 and 450 acres. A mineowner must pay:—(1) On receiving his license 50 ticals (or £10); (2) yearly; (a) fixed rent of 2 ticals (8s.) per acre and (b) a proportional rent on the gross produce of 2½ per cent. for combustible substances and iron, 3 per cent. for gold and precious stones, and 4 per cent. for other substances. Any mine owner can, under certain conditions, renounce his rights to a mine which he does not find sufficiently remunerative."

NITRATE OF SODA.—Mr. Thomas Aikman, jun., reports, May 1: Since report of 23rd ultimo about 25,000 tons have arrived off coast and direct, including about 12,000 tons, which sailed in February, and business at 9s. 9d. to 9s. 4½d. per cwt. is reported in off coast, the close being steady. To arrive early February sailings are reported at the equivalent of 9s. 3d., April sailings at 8s. 8½d. to 8s. 9d., large June-July at the equivalent of 8s. 7½d., while October-November shipment is worth about 9s. per cwt. Cable quotations are: Cost 5s. 1½d. to 6s. 1½d. per quintal, exchanged 12½d., and freights dull at 26s. 3d. to 27s. 6d. per ton, with about 14,000 tons register disengaged spot tonnage. The comparative statistics for the first four months of the year show an increase on same period of 1893 in deliveries of 112,000 tons, and a decrease in visible supply of 65,000 tons at April 30. The shipments to Europe during May, June, and July are estimated as not likely to exceed 160,000 tons against about 160,000 tons during the same three months last year. The total visible supply, probably available to August 31 in Europe, was 211,000 tons, against 297,000 in 1891; 317,000 in 1892; and 276,000 in 1893. The spot price on April 30 was 9s. 6d., as compared with 9s. in 1891, 8s. 6d. in 1892, and 9s. 9d. in 1893; and the distant 9s. against 9s. 3d. in 1891, 8s. 6d. in 1892, and 8s. 9d. last year.

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Editorial and Advertisement Offices:
18, FINCH LANE, LONDON, E.C.

Telegraphic and Cablegraphic Address: "TUTWORK, LONDON."
Codes used: "A.B.C." Moreing's, and "Universal."

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LONDON: MAY 5, 1894.

MINERAL STATISTICS FOR 1893.

THE yearly statistics relating to the mines and minerals of the United Kingdom, which are prepared from the reports of the Inspectors of Mines, are full of interesting information, and show not only the progress or retrogression of the mineral industries of the country, but also the production of the various mining districts, and the number and causes of accidents. Government statistics, however, are not within the reach of everyone, nor are they light reading, and so the information wrapped up in them is often lost to the general public. The mines of the United Kingdom are divided into two classes, viz., those worked under the Coal Mines Regulation Act of 1887, and those classed under the Metalliferous Mines Regulation Acts of 1872 and 1875, and the State Mines (Gunpowder) Act of 1882. Dealing first of all with the mines under the Coal Mines Act we find, that the total number of hands employed above and

below ground last year was 683,008, or about 600 less than in the preceding year, while the number of tons of mineral extracted was 175,236,857, as against 191,954,908 in 1892. The bulk of the mineral was coal, and, as will be seen by the following table, the output as compared with 1892 showed a decrease of over 17,000,000 tons. To what extent this falling off was due to the disastrous coal strike we are not prepared to say, but the figures are very significant.

| | 1892. | | 1893. |
|---|-------------|------|-------------|
| Coal | 181,786,871 | | 164,325,795 |
| Fireclay | 2,212,333 | | 2,186,243 |
| Ironstone | 5,664,486 | | 6,560,189 |
| Oil shale | 2,085,662 | | 1,956,520 |
| Other minerals (limestone, pyrites, ganister, shale, &c.) | 225,556 | | 208,110 |
| Total | 191,954,908 | | 175,236,857 |

Some of the iron mines, however, are classed under the Metalliferous Mines Acts, and so we find that the total output of the kingdom of iron ore reaches the respectable figure of 11,203,476 tons. The effect of the importation of foreign iron ores, however, is very noticeable, for 20 years ago the home production was 15½ million tons, and reached a maximum, in 1882, of over 18 million tons. From time to time the world is startled by an accident in coal mining, involving the death of a hundred or more men at a stroke, and from the impression thus created we are apt to look upon mining as a dangerous pursuit; indeed, its reputation in this respect is notorious. When, however, we come to examine the official returns we find that the rate of fatal accidents is not so high as we had anticipated. Last year, for example, the rate per 1000 employed above and below ground in the mines classed under the Coal Mines Regulation Acts was 1.552, or, say, one and a half per thousand, which is equal to six on every million tons of mineral extracted. We are apt to associate the number of accidents with that of explosions of fire-damp or coal dust, but these do not account for the greatest number of deaths which are due, in fact, to falls of the roof and sides. From this latter cause no less than 412 men lost their lives, while from explosions the number was 160, of which Yorkshire is responsible for 142. The whole of these accidents are properly classified in the statistics before us; the subject, indeed, has been gone into so minutely that a table is given showing the hours of the shifts which are the most fatal. Curiously enough, it is shown that for underground work the sixth hour claims the most victims, while on the surface the first hour is the most dangerous. It would be interesting to go still further into this question, and endeavour to find out the law which governs the relative fatality of the hours; but this is a subject of too extensive a nature to be treated of at present.

Turning, now, to the mines and quarries under the Metalliferous Mines Acts, we are sorry to find that, on the whole, the figures show a marked decrease in production, especially as regards metallic minerals. In the whole kingdom the number of mines at work is 825, and that of the hands employed above and below ground, 35,739; as against 38,166 in 1892, and 62,683 in 1873. The following table shows the production of some of the principal minerals in 1892 and 1893, as compared with 1873, and it will be seen that with the exception of salt and slate there has been an all round decrease during the past 20 years.

| | 1873. | 1892. | 1893. |
|-----------------------------|--------------|--------------|------------|
| Gold ores | — | 9,990.. | 4,489 |
| Lead ores | 73,500.. | 40,024.. | 40,808 |
| Copper ores | 80,188.. | 5,995.. | 5,346 |
| Copper precipitate | 60.. | 270.. | 230 |
| Zinc ores | 15,969.. | 26,880.. | 23,754 |
| Tin ores | 14,885.. | 14,429.. | 13,689 |
| Iron ores | 15,577,499.. | 11,312,675.. | 11,203,476 |
| Uranium ores | — | — | 25 |
| Manganese ores | 8,671.. | 6,078.. | 1,336 |
| Salt | 1,785,000.. | 1,956,524.. | 1,924,029 |
| Phosphate of lime (1874) .. | 149,654.. | 12,200.. | 3,300 |
| Slates and stalls (1874) .. | 151,989.. | 418,241.. | 438,993 |

Foreign competition has doubtless been largely the cause of this decrease, but we fear that with respect to the ores of lead, copper, zinc, and tin, many of the mines are closed because of the imperfect appliances with which they are fitted up for the concentration of the mineral. Indeed, we feel sure that if the same attention were paid to this subject at our home mines as is done at foreign ones, many of the former could be reopened, and, if supplied with recent concentrating machinery, worked at a profit. Knowing as we do the conditions under which the manganese mines are worked in Wales and Devonshire, we are surprised to see that even a thousand odd tons can still be extracted, presumably at a profit; especially when we recall the enormous deposits of this mineral which we have seen in other parts of the world.

The amount of gold ore extracted in 1893 will be seen to be less than half of what it was in the previous year. The little item of 25 tons of uranium ore has an interest of its own, although this small production does not realise the hopes held out when this mine first came before the public. The accident list for the metalliferous mines amounts to a total of 65 deaths, which, considering the dangers of the calling, is not a serious amount. Compared with the number of deaths under the Coal Mines Regulation Act it does not come out favourably, for, as we have already shown, the ratio per 1000 hands employed was on the latter industry 1.552, while in the metalliferous mines the ratio is 1.781. This slight increase is difficult to account for as, of course, in metal mining there are no explosive gases, a source of risk which adds greatly to the ratio in collieries. The general depression in trade for the last few years has doubtless affected the mineral production of the kingdom. At present the business outlook is improving, and we hope that a general revival of trade will bring about a revival of our home mining industries.

AN EVIL CRYING FOR REDRESS.

IF there be any truth in the reports which come to hand continually as to the barbarities perpetrated in the Sicilian sulphur mines—and hitherto they have not been contradicted—there is a dark blot upon the reputation of Italy. A correspondent, writing from the matchless Bay of Naples, sends to a daily paper a graphic account of the suffering and misery endured by the pit boys that should not go resultless into the waste-paper basket. At a time when suffering of all kinds arouses indignation upon every hand, an inarticulate cry of ‘naked, lean boys, with blackened bodies, crooked legs, abnormally thick and swollen knees, irreparably curved spines, and protruding or caved-in shoulders,’ ought not to appeal in vain to our common humanity. Were not such a description attested upon indisputable authority the reader might even hope that it contained some element of exaggeration. Signor CHIESI, the author of *La Sicilia Illustrata*, describes how “along the tunnels and steps leading to the outer air a continuous file of boys from 12 to 15 years of age passes. They carry in one hand a stinking lamp, and support with the other a sack or cane basket, filled with ore. They bend under the weight, and groan at every step, often actually gasping for breath in the foul atmosphere.” And again—with a style that necessarily has some sort of poetry in it—“Their faces are pale and emaciated. They seem doomed to consumption and early death. Their eyes are fixed and hardened, and only give signs of life when, on reaching the outer air, the boy wipes the tears from them and the sweat from his brow. For the *carusi* weeps, and has sufficient cause. He weeps for the shortness of breath, for ill-treatment by his overseers, and he weeps with a silent grief without a ray of hope.” Such sentences as these force numberless questions into the mind. Is there a free press in Italy, and, if so, why should such iniquities cry for redress through the columns of English newspapers? How can a representative Government co-exist with the perpetration of such cruelties, and even remain quiescent with a knowledge of them? Italy has its public press, and, what is more, it has, or it had, its labour Unions. These latter—Fasci as they are called—have suggested co-operation as a remedy for these evils. But the leaders of their organisations are in prison. Perhaps their actions have been ill-judged, and have ended in the temporal defeat of a just cause. Yet, if there could ever be excuses for questionable methods of agitation, they would be furnished by the barest and most unimaginative description of the sufferings undergone by these *carusi*. Of mine inspection there can be little in Italy. Even the merest pretence to the exercise of surveillance over the mines in the interests of humanity and justice could hardly afford to overlook barbarities such as these. Some phrases in Signor CHIESI’s book seem to imply that the public attention and conscience are awakening to these underground cruelties. “It would be impossible,” says that author, “to abolish suddenly by law the use of the *carusi* in the sulphur mines without, at the same time, stopping the industry altogether, and reducing a large population to starvation.” Surely, however, some middle course between absolute prohibition and entire neglect would alleviate the suffering without paralysing an industry. To nineteenth-century eyes the picture of 38,171 mine workers, including 7613 boys under 15 years of age, living in complete dependence, ill-paid, ill-fed, and diseased in body, is not a pleasant picture to carry in the mind. Such evils as these can only exist in darkness. Once the light of publicity has brought them into prominence, they are rarely forgotten until their complete abolition has been effected. To bring about the healing of such plague spots there must be a strong force of public opinion, and a sufficiency of information to enable it to be quickly and accurately formed. These factors in a healthy body social are not present in such perfection in continental countries as with us; but the merest elements of them could hardly be ineffectual in such a case as this. It is well to know that these crying evils have been exposed in a book that will be sure to have a wide circulation. If a remedy does not follow upon this, the public conscience in Italy must be a very lifeless one.

GARGANTUAN GOLD MINING.

THE blanket beds of the Witwatersrandt have already provided the most remarkable instance of a sudden development yet afforded in the history of mining. It seems as if they would very strikingly out Herod-Herod in the course of the next approaching phase of their history. Bigness in mining enterprise has ceased to be the peculiar pride of the United States, and South Africa seems quite able by the richness of her resources and the overwhelming ambitions of her financiers to go on creating records in this respect. Amalgamation is the key-note of successful undertakings in that country, and the example of the De Beers Company may fairly inspire confidence in the capabilities of the principle. The conglomerate of the Transvaal gold fields, like the diamondiferous “blue” of Kimberley, peculiarly lends itself to operations conducted by a central organisation, and upon an enormous scale. Where the auriferous deposits are low grade, but of almost illimitable extent, profits must depend upon the putting of an enormous quantity of ore through the mills, just as English coal mining can only be made to pay now-a-days by the employment of a huge capital, and the hoisting of thousands of tons of coal per working day. On the Randt working on similar lines the same rule exactly applies. The existence of half-a-dozen mines upon one stretch of properties means the waste of capital by the construction of a dozen shafts where, perhaps, two would serve. The latest system of working the Randt mines is to centralise all the power and machinery at one or two shafts, conveying the necessary power for pumping, winding, and bringing the ore to a central crushing mill over several mines

by means of electrical transmission. We may see the day when the whole of the mining plant on the Randt may be driven from dynamos on the adjoining coal fields; failing that, the mines are gradually coming to distribute power (and light as well) over the whole of their workings from an enormous central engine house. This plan not only saves capital expenditure in the first development of a mine, but also represents a saving, in some instances of several shillings a ton, of the ore mined in the working expenses. It is not, therefore, surprising that South African financiers are taking with avidity to the task of forming whole groups of mines into single self-contained concerns. On the De Kaap fields this tendency is represented by the recent absorption of the Oriental properties into the Sheba Company, and by the fusing of other mines in the district. On the Witwatersrandt this example is to be followed on a much larger scale. There has lately been talk of several schemes of amalgamation by Johannesburg financiers, and now we hear of a project which would involve the raising of a working capital of £500,000, and the taking over of properties of which the capitalised value is £1,000,000. This is a big scheme, and our respect for its proportions only grows when it is stated that a battery of 1000 stamps is to be employed, but it is being engineered by the Consolidated Gold Fields, of which Mr. CECIL RHODES is the leading spirit, so that mere bigness is not likely to stand in the way of its execution. It is as yet, however, only in the air at present, and there may be obstacles in the way of so gigantic an operation being persisted in. But the Consolidated Gold Fields has acquired control over nearly 1000 claims held by the Simmer and Jack Company (which has only recently been raising fresh capital for heavy expenditure on plant), the South Simmer, the Salmon Block, the Consolidated Deep, and the Rand Victoria Mines; and there can be no doubt that a monumental mining undertaking, conducted upon a perfectly unprecedented scale, will grow out of their action. It is satisfactory that the Consolidated Gold Fields should be the author of this new movement in the direction of improved management on the Randt. That company carries with it the reputation of being, perhaps, the most honestly formed and administered concern in South African gold mining. Some of the other schemes of amalgamation, of which there are whispers, are being conducted by persons who will hardly command the same confidence. The financial tone of the Randt has not been too high in the past, and formations and reconstructions have been all so many excuses for fleecing the public. It may justly be feared that some of the proposed amalgamations are intended simply to get the British investor to pay enormous prices for valueless shares. However, there is the record of experience to protect the investor against such devices, and the reports of the storms at the Witwatersrandt Company’s meeting in Johannesburg show that the conditions of Transvaal mining finance are becoming much better understood. Moreover, the new schemes which have been floated recently, mostly with the aid of French syndicates, have arranged for very modest sums of purchase money as compared with those which were obtained in the earlier history of the “Kaffir Circus.” The British investor may be advised to examine all such schemes carefully on their individual merits, but blind confidence is not more blind than the indiscriminate censure which some persons are ready to apply to them. South African mines are rapidly reaching a much more respectable and legitimate standing as a vehicle for judicious speculation. Some of them can even claim to be excellent investments.

NOTES AND COMMENTS.

THE proposal of the directors of the Gold Fields of Mysore Company to raise further capital to exploit their own property has met with the unanimous approval of the shareholders. Bearing in mind the encouraging features presented by the Golconda block, the directors are quite justified in taking this step. We need scarcely remind our readers of the intention formed some time ago to practically discontinue mining, as it will be already fresh in their minds, and if not, sufficient is said in Lord Ribblesdale’s speech to stir up their recollections on this head. In face of the evidence which is continually received as to the richness of the portion of the property to which we have referred, we could not have supported the directors in any policy to allow it to be worked by another company, and thus place an advantage before others to which the shareholders of the Gold Fields of Mysore were alone entitled, notwithstanding that, of course, the latter would have the premier privilege of subscribing. Not a little reliance must be placed upon Mr. Gilbert Elliot’s opinion. This gentleman, always prudentially critical, considers the directors have acted wisely in taking the south shaft into their own hands and working it. His intimate acquaintance with the property and his expert knowledge are not likely to lead his judgment astray, and, therefore, to such an opinion we think much weight should be attached. Then, again, the statement made by Mr. John Taylor is invaluable, and as it is absolutely in favour of the step about to be taken, there can be little doubt that the action will lead to success.

THE long-suffering shareholders of the White Lead Company will have reason to be encouraged by the report issued by the directors. It is the most satisfactory document they have had placed before them for a long time. We are pleased to see some progress made in the right direction. It is true, it is nothing to be jubilant over, but it is better than retrogression and failure. The operations for the period covered have resulted in a balance on the right side, though a small one—only £381. The directors, however, place upon this great significance. It is evidence, at least, that they are not at the present time struggling in vain. This little balance stands out all the more conspicuous and hopeful, inasmuch as during the past

year there have been many difficulties to overcome. These have not resulted from internal causes, but outside circumstances, such as coal strikes, and a deficiency in the supply of lead ore. In introducing this the directors say: “The coal strikes, which lasted in Scotland for about 12 weeks, during the autumn made it absolutely impossible to procure a sufficient supply of fuel, and for a short period manufacture was wholly stopped. During a longer period the supply of coal and coke was deficient in quantity, poor in quality, and furnacing could consequently only be carried on intermittently and at greater cost. There was also a difficulty during the fall in obtaining a supply of suitable lead ore.”

NOTWITHSTANDING these drawbacks, the business was still further increased, so the directors assure us, especially for white lead ground in oil. It is more satisfactory and more profitable, they say, to sell white lead ground in oil than in the dry state. Another advantage, likewise, results from this operation, for the extra cost of drying is thus saved, and better colour and consistency are thus obtained. “The sulphate of lead thus produced is superior in some and equal in all other respects to the best English white lead manufactured by the Dutch or any other processes; and at the same time the company can afford to sell it, and does sell it, with satisfactory profit, at about £3 per ton under the market price for the best carbonate white lead. Grinders and others who were formerly prejudiced against the company’s product are now purchasing it, some of them covertly, and the numbers of customers on the books constantly increase.” Here is a statement of fact and a statement of opinion. As the latter is naturally a biased one, we must put some discount upon it. If the customers are increasing, however, and the product is sold at a profit, it is evidence of its increasing popularity and value, which, from a shareholder’s point of view, is satisfactory and hopeful. As a result of this better condition of affairs, we shall anticipate more harmony of feeling at the forthcoming meeting than has been the case for a long time past. The directors, in waiving their fees, will earn the gratitude of the shareholders.

THE career of the Colombian Gold Mines (Limited) has been anything but reputable, though, we are sorry to own, it is not an isolated instance. The history of too many mining syndicates has been similar, and has been one of the influences which have made the public keep aloof from such concerns. Nor have they at all tended to envelope the industry itself in an attractable odour. At a meeting of the creditors and shareholders of this concern, the Official Receiver (Mr. G. S. Barne) gave some startling information. There have been three companies successively formed to acquire and work the same property. In the first instance, the Colombian Mining Syndicate was formed in March, 1885, with a capital of £4000. The Silencio Gold Mines (Limited) was formed in April, 1885—only one month from the starting of the Colombian Mining Syndicate—to acquire the property, and the capital was then agreed at £24,000. Then, four years later, in December, 1889, the Colombian Gold Mines (Limited) was formed. No further property was to be acquired, but the capital was increased to £50,000. An important point to which attention ought to be called was that some samples of concentrates were sent home to England with a report that there was a great heap at the mines. The sample was tested, and found to be extremely valuable, whereupon Mr. W. T. Rickard, a mining engineer and metallurgical chemist, was sent out to the mines to treat the concentrates and turn them into money. Had the heap of concentrates at the mines been at all according to sample, the company would have had a bright future before it, but Mr. Rickard found that such was by no means the case. In fact, all that was found proved to be a heap of valueless rubbish, so that Mr. Rickard did not succeed in making anything either for the company or himself. The sooner, therefore, this company is consigned to oblivion the more freely we shall breathe.

THERE was no hint of a doubt at Monday’s meeting of shareholders in the Don Pedro as to the policy of reconstruction. A strong feeling prevailed that a sponge ought to be passed over the slate, and a new commencement made. To err is directorial, and that in a more emphatic sense than in the general reading of the adage, for the directorial path is beset with greater difficulty than most other human walks of life. But little attention is ever given by the critical shareholder to the obstacles in the way of exercising an effective control from London over a Brazilian mine. The English manufacturer, who has only to go into his works, see what is doing, and swear at, or belaud, his staff, as the occasion may demand, can form but an inadequate conception of the precise position of a director, who has to transmit his orders by cable at something fabulous a word, or else to wait nearly a quarter before hearing how his instructions have been complied with. With an aggravated form of this difficulty the Don Pedro directors have had to endure what may be called the paralysis of impecuniosity, and the result of the whole discouraging combination has been what the directors themselves candidly acknowledge to be a failure. This ingenuous admission, as we have said elsewhere, inspires confidence where a claim to immaculate wisdom and unerring foresight would create distrust. What has passed has evidently been an education for the board, and one by which they have fully profited, as the Chairman speech clearly indicated. The policy foreshadowed by Mr. Tolpitt, in his eminently practical and business-like fashion, is the one needed to set the mine, as it is termed, upon its legs. Rigid economy, vigorous and well-advised development, strict supervision, will effect the purpose.

THE exportation of iron ore increased very largely during the year, owing to the opening up of the Gellivara mining district. 447,431 tons were shipped during the first 11 months, whereas the quantities exported during the corresponding periods for the years 1892-91 were 298,336 tons and 159,467 tons respectively. This large increase in production and exportation has,

however, been attended with a heavy fall of prices. Before the opening of the Gellivara mines, ore of similar quality with that produced from them sold for prices in some instances 50 per cent. higher than those now obtainable. It is anticipated that a still more considerable increase in the output and exportation of iron ore will take place in the course of the present year. Charter parties for the shipment and delivery of more than 500,000 tons of ore are already signed, for the most part by Norwegian shipowners, so that it is unlikely that the total export will fall short of 600,000 tons.

The year 1893 was an unfavourable one for the Swedish iron industry, the export of nearly every description of iron and steel goods, with the exception of pig iron, showing a decrease. Pig iron was shipped to a larger extent than was the case during the preceding year, but the prices obtained were not good. The outlook in this market, however, is now better in consequence of the resolution adopted by the Swedish Ironmasters' Association in the beginning of last year to diminish the output of Swedish pig iron by 10 per cent. This resolution has been acted on, with the result that stocks are reduced and prices now fairly maintained. The following table shows the production of iron in Sweden during the first nine months of 1893, compared with a similar period of 1892:—

| Description. | First Nine months of 1892, Tons. | First Nine months of 1893, Tons. | + Increase, — Decrease, in 1893, Tons. |
|-----------------------|----------------------------------|----------------------------------|--|
| Pig iron | 344,680 | 317,170 | — 27,510 |
| Bloom iron | 164,313 | 161,071 | — 3,242 |
| Bessemer ingots .. | 63,441 | 62,662 | — 779 |
| Siemens-Martin ingots | 56,682 | 60,352 | + 3,670 |

OUR CITY ARTICLE.

FRIDAY EVENING.

THE MINING MARKET.

A quiet week.—Weather and holidays produce dullness.—Speculative Land Shares weak.—South Africans steady.

BUSINESS has been decidedly dull in both departments of the Mining Market during this week, owing in a large measure to the Stock Exchange holiday on Tuesday. Many took holiday at the commencement of the week, and their absence combined with Monday's persistent drizzle to shed almost a gloom over the market. Among the more speculative stocks, the general weakness was especially noticeable, and continued without intermission down to the close of the week. Chartered vacillated doubtfully, and commenced a downward movement that persisted for some days. With the more solid investments the quietness was by no means the result of weakness. What operations did take place, generally made for improvement. Simmer and Jack were a prominent feature on Monday, the recent advance continuing, and bringing the shares at one time to 6½. One or two declines were at the same time registered in other shares, but they were of no importance even in the miscellaneous market where they occurred in the greatest number. No great activity followed upon the resumption of business on Wednesday morning. A flat tone continued amongst the more speculative stocks. Land shares were generally offered, and closed somewhat weaker. Chartered drooped considerably upon further sellings. Simmers, Shebas, and Champ d'Or, in the South African market, and Mysore, Nundydroogs, and De Lamars, in the Indian Department, were the principal features, and exhibited marked strength. Urgent enquiries for Champ d'Or were made, on the report that the profit for March is double the profit for February, and that the yield for April is from 3300 to 3500 ounces. All necessity for reconstruction is said to have passed. Thursday brought with it a further accession of dullness in both sections. Jagersfontein, Chartered, and Goldfields were lower, while the depression spread in the South African shares. A few of the Rand shares improved. Jumpers rose upon demand to 4½, while Champ d'Or were still in request, and improved to 1½. The same buoyant tone characterised Kleinfontein, Salisbury, Jubilee, and Goldenhuis Deep. The recessions were in Nigels, Rietfonteins, and Rand Mines. Some of the lower-priced shares in the miscellaneous department drooped away, but Indian Mines were remarkably firm, the number of shares on the market being very small. Gold Fields improved on the meeting, Ooregums hardened to 4½, while Champions and Nundydroogs remained strong.

British Mines.

A moderate business has been done in Cornish shares this week. Carn Brea have improved to £11 "buyers." In cross-cutting south at the bottom of the shaft at Highburrow east in the 322, they have met with a lode in granite, into which they have cut about 4 feet, and find it is "tinny." As they approach the south wall, the probability is that the lode will improve. Dolcoath have rallied 7½. The run has nearly been cleared, and it is expected that the engine will be at work early next week. Killifreth are steady at 3½. Polberro have been enquired for at 2½. South Crofty are steady at £3. West Kitty are a shade easier at 6½. South Frances is still looking well, but the share is lower. West Frances in request at 47s. 6d. There has been a good demand for Wheal Grenville, and the price has advanced to £18 without any business being reported. The lode in the shaft is worth £100 per fathom.—Risen: Carn Brea, 10s.; Dolcoath, 90s.; Tincroft, 5s.; Wheal Agar, 10s.; and Wheal Grenville, 40s.—Fallen: Cook's Kitchen, 2s. 6d.; South Crofty, 5s.; South Frances, 5s.; West Kitty, 2s. 6d.; and West Frances, 2s. 6d.

South African Shares.

Business was very dull in the South African market at the commencement of the week, the attendance being but meagre, owing to the holiday. The tone of the market, however, was by no means weak. Simmer and Jack were the chief feature. The recent advance was continued, and carried the shares to 6½, the closing quotation being somewhat under that figure. Chartered were quieter, and eased off to 3½s. New Primrose were offered at 4½, but finished at 4 11-32; and there was a good enquiry for Worcester and United Roodepoort, the shares being about ½, or 3-32 better at 2½ and 2½, respectively. Nigels and Pioneer were each ½ up at 2½ and 3½, and Consolidated Deep Level, Jumpers, Stanhope, and Glencairn were all pretty firm. No considerable falls were recorded, the declines in Rand Mines, Village Main Reef, and New Chimes amounting to 1-32 or ¼ only. Among the cheaper shares Sutherland Reef recovered most of their recent fall, and left off 9d. better at 4s. 9d. Van Ryn rallied to 12s., and George and

May and Randfontein were slightly harder; but Kimberley-Roodepoort were weak at a decline of 6d. to 8s., and May Consolidated and East Rand left off 3d. down. On the resumption of business on Wednesday morning after the holiday there was little display of animation in the South African department. The dullness was especially pronounced in the more speculative stocks. In some other directions, however, operations, though restricted, occasioned a tendency to firmness. Land shares were offered for sale and showed signs of weakness. Chartered were sold for some unknown reason and fell to 34s. 3d., whilst Bechuanaland went down to 31s., and Exploring to 5. Enquiries set in for gold shares. One or two weak places were noticeable in market, but the general tone was undeniably a good one. Selling orders transmitted by cable from the other side sent New Rietfontein down to 1 15-32. Declines to a small extent were registered in New Aurora West, Rand Mines, Consolidated Deep, and Meyer and Charlton. Cities hardened to 13½, though the April yield exhibits a decrease. Simmers were especially strong, owing to the amalgamation scheme, while a demand for Jumpers sent them up to £4. Kleinfonteins continued to rise, and there were also advances in Chimes, Ferreira, Heriot, Langlaagte, Nigel, Worcester, Modderfontein, Van Ryn, and Goldenhuis Main Reef. Rietfonteins remained flat, Rand Mines receded, and a few others were a shade lower. Virginia (Transvaal) were dealt in, and continued firm. Consolidated Goldfields maintained a good tone at 2½ buyers, and the Company's Debentures advanced to 99½. Goldfields Deep also were strong. The dullness noticeable on the previous day in this market deepened to some extent on Thursday, and prices generally began to fall. Selling predominated to some extent in the speculative land shares. Chartered relapsed and rallied, closing 9d. lower on the day at 33s. 6d. Bechs. declined to 30s., while Consolidated Gold Fields somewhat eased off. Smaller declines took place in Balkis Land at 2s., in Central African at 3s. 6d., and in South African Gold Trust at 19s., the only advance occurring in Exploration, which left off ¼ higher at 1½ premium. Rand Mines declined ½, to 8½. Pioneer were down to a similar extent at 3½, and Transvaal Gold showed a shrinkage of ¼ at 1½. The weaker tone also affected New Chimes, which left off at 2 3-32, and Wolhuter, which were down to 3½. New Rietfontein, owing to sellings from the Cape, were 3-32 worse at 1½. Worcester relapsed ¼, to 2½, and smaller relapses occurred in Heriot, Langlaagte, Robinson, and Village Main Reef, while George and May were 6d. down at 23s. Shebas were somewhat weaker, but, on the other hand, the inquiry for Kleinfontein caused a recovery of ¼, to 1½, and there was some enquiry for Jumpers and Salisbury, which were each 3-32 higher at 4 3-32 and 2½ respectively. Jubilee rose ¼ to 5½, and Consolidated Deep Level hardened to a small extent. Among the lower-priced shares Aurora fell 1-32 to 7½. Bantjes fell 6d., to 14s., and Barrett, Block B, East Rand, Lisbon-Berlyn, May Consolidated, and Randfontein were all offered at somewhat decreased values. Throughout the day business has not been brisk in this market. Simmer and Jack were the most prominent shares. They continued to improve, and seemed likely to preserve an upward tendency for some time to come.—Risen:—Central African Trust, 9d.; Champ d'Or, 5s.; Consolidated Deep, 1s. 3d.; Ferreira, 2s. 6d.; Goldenhuis Main Reef, 6d.; Glencairn, 6d.; Grahamstown, 6d.; Johannesburg Water, 6d.; Jumpers, 5s.; May Deep, 6d.; Meyer and Charlton, 2s. 6d.; New Chimes, 5s.; New Primrose, 2s. 6d.; Nigel, 1s. 3d.; Salisbury, 5s.; Sheba, 1s.; Simmer and Jack, 12s. 6d.; South African Gold Trust, 6d.; Sutherland Reef, 6d.; Wolhuter, 2s. 6d.; Worcester, 2s. 6d. Fallen:—Alexander Estates, 6d.; Aurora, 3s. 9d.; Balkis Land, 6d.; Bantjes, 6d.; Barrett's, 6d.; Bechuanaland, 1s. 6d.; Block "B," 6d.; Booyen Land, 2s.; Chartered, 2s.; De Beers, 5s.; East Rand, 1s.; Exploration, 1s. 3d.; Exploring, 2s. 6d.; Johannesburg Estates, 1s.; Klerksdorp, 6d.; Lisbon, 6d.; Maya, 6d.; Moodies, 6d.; Mozambique, 1s. 3d.; New Jagersfontein, 7s. 6d.; New Virginia, 6d.; Oceana, 2s. 6d.; Princess Estates, 2s.; Rand Mining, 5s.; Rietfontein, 2s. 6d.; Roodepoort Kimberley, 6d.; South African Trust and Finance, 6d.; Spes Bona, 5s.; Transvaal Coal, 6d.; Transvaal Exploration, 2s.; Zambesia, 7s. 6d.

Indian and Miscellaneous Shares.

Owing to causes similar to those operating in the South African market, there was a great dullness in the Indian and Miscellaneous department at the opening of the week. Broken Hill Props. and Day Dawn Block were in favourable request at a rise. De Lamar, Montana, Elkhorn, and New Queen all relapsed. Throughout Wednesday this market continued to exhibit the dullness usually following upon a holiday. Most of the operations effected, however, tended to firmness. De Lamar gained 1s. to 18s. 6d., and Nundydroog were about 1-32 better at 1½, a stronger tendency setting in for Columbian Hydraulic at 16s., for Day Dawn at 7s., for Frontino at 20s., and for Wentworth Ordinary at 6s. Aladdin remained steady at 1½. Ooregum declined ¼ to 4½, and St. John del Rey 1s. to 1 5-32. Slight declines were registered in Callao Bis, Caratal, Day Dawn P.C., Idaho, Kaboonga, Montana, and New Queen; but in most cases the falls were generally of little importance. In Indian shares there was a hopeful spurt in Mysore and Nundydroogs. The decline in the price of copper affected unfavourably the shares of those companies interested in the metal. Thursday's tone was equally unfavourable in the miscellaneous section as in the South African department. Broken Hill Proprietary, Champion Reef, and Mysore Gold Fields were dealt in with some advantage to the quotations, and Nundydroog were also harder at 1 7-32. Mysore Reefs, however, dropped 6d. to 10s., and Day Dawn Block receded 1s. to 6s. In the copper department Rio Tinto showed no further decline, but a small fall occurred in Cape Copper. There have been no changes of any importance in this market during to-day. Enquiries for some of the better-priced shares maintained the firmness of the department in several of its branches. Indians were especially strong. Risen: Bayley's Reward, 1s. 3d.; Brilliant Block, 1s. 3d.; Broken Hill Proprietary, 2s. 6d.; Champion Reef, 1s. 3d.; Frontino, 1s.; Golden Feather, 6d.; Golden Gate (California), 6d.; Gold Fields of Mysore, 1s.; Mason, 2s. 6d.; Mount Morgan, 1s. 9d. (allow div.); Mysore, 1s. 3d.; Pinos Altos, 6d.; Waihi Gold, 1s. 3d.; Wentworth Ordinary, 6d.—Fallen: Aladdin's Lamp, 2s. 6d.; Alaska, 2s. 6d.; Brilliant, 6d.; Cape Copper, 1s. 3d.; Columbian Hydraulic, 6d.; Day Dawn, 9d.; De Lamar, 2s.; Linars, 2s. 6d.; Montana, 1s.; Moss Rose, 6d.; Namaqua, 1s. 3d.; New Queen, 1s.; Nine Reefs (fully-paid), 6d.; Ooregum Prof., 1s. 3d.; Quebrada, 3s. 9d.; Rio Tinto, 11s. 3d.; St. John del Rey, 1s.; West Australian, 2s. 6d.

SETTLING DAYS.

| Ticket Days. | MAY. | Account Days. |
|-----------------------|------|--------------------|
| Thursday, May 10. | | Friday, May 11. |
| Tuesday, May 29. | | Wednesday, May 30. |
| CONSOLS SETTLING DAY. | | |
| Friday, May 4. | | Friday, June 1. |

SCOTTISH MINERS' WAGES.—At a largely attended meeting in Glasgow on Wednesday afternoon, of Lanarkshire, Ayrshire, Airdrie, Bathgate, and Slamanan coalmasters, it was unanimously agreed to reduce miners' wages 1s. per day, the reduction to come into force in Lanarkshire and Ayrshire on the 7th inst., and in Airdrie, Bathgate, and Slamanan on the 10th inst.

MINING IN CORNWALL

AND DEVON:

NOTES ON WESTERN MINING, EDITORIAL AND OTHERWISE.

IN the early part of this week a decidedly more hopeful tone pervaded the share market, and things all round assumed a better aspect. Prices of shares now are really nominal, a fact which is due to the general inactivity among operators. There has been no business to speak of; there certainly are few sellers, and when the demand comes, as it inevitably will, those who wish to procure stock will have to pay very much higher prices. Those who have been holding mining stock at great sacrifice to themselves are not likely to dispose of their interest in the early days of a rise, but will wait until they are sure of reaping a substantial reward for their patience. The shares which are mostly obtainable now are those which people want to turn into cash in order to meet their liabilities in other directions, so that intending speculators need not entertain any hope of securing a haul by picking up a number of cheap shares.

No time has been lost over the work of removing the effects of the run in the engine shaft at Dolcoath. It has necessarily been a tedious business, but pares of men have been continuously engaged, and very substantial timbering has been put in. The executive have every hope that in the course of a few days the shaft will be cleared and the pumping engine at work again. The water has risen to the 412, so that practically the most productive parts of the mine have been inaccessible for about a fortnight. It will now take them some days before the bottom levels are drained, and the returns of tin for the next quarter must in consequence suffer, though, perhaps, not to the extent which some people feared. The stamps have been kept going for the whole of the time, though they have been engaged in crushing somewhat poorer stuff. But Dolcoath has any amount of very rich ground in the bottom levels, particularly in the 425, which, when it is available, will to some extent make up for the deficiency arising from the run. The news of the rapid progress which has been made with this work had a very strengthening effect on shares in the early part of week, and they fully recovered the late drop.

AFTER the uninterrupted payment of a long series of dividends, amounting in all to £110,000, West Kitty Mine has had its record broken. The last sentence has been worded, as a well-known Cornish mine-committeeman would say, "advisedly," for the mine has been the passive object of a depression in the tin trade, and not a contributor to the result. To what a discouragingly low figure tin values have sunk during the past year or so appears from all the directors' reports. Though it is by no means a pleasure to dwell upon the fact there is satisfaction in comparing it with the gradual rise which has marked the price of tin during the last few weeks. "Richard" is not yet "himself again," but to all appearances he soon will be. Should this happy consummation arrive the shareholders in West Kitty will reap an ample advantage for the far-sighted and cautious policy their committee are pursuing, and which was so clearly reflected in the lucid and able speech which Mr. J. B. Reynolds delivered on Wednesday last from the chair. Had the members of that cabinet allowed their desire to preserve unbroken a splendid dividend record to coerce them into an injudicious forcing of the resources of the mine, the mere temporal advantage resulting from the move would have been more than counterbalanced by its after effects. The steady policy of conservatism—using the word in its higher meaning—which is theirs will meet with the approval of all their shareholders who are able, by special knowledge, to form a sound opinion, and is one more title to that complete confidence in the minds of the proprietors which they have evidently aroused and maintained.

THERE has also been a slight run at Carn Brea, but this took place in one of the levels, and consequently did not seriously interfere with the working of the mine. We hear that there is a capital improvement in the Highburrow East part, and any discovery which takes place here must be of great importance to the mine. When the new boring machinery is in full working order operations will be pressed on, and those who know the district best express a confident opinion that the chances of success are even greater here than in Highburrow West.

THE proceedings at the annual meeting of the Mining Association and Institute were not exactly inspiring. The attendance was smaller than usual, and the speeches hardly up to the average. It would seem that the depression, like the proverbial skeleton at the feast, caused the thoughts of the guests to assume anything but a convivial turn, for their speeches, if not their countenances, were "sicklied o'er with the pale cast of thought." It is true that most of them prophesied better things to come; without this infusion of a more hopeful element the proceedings would have been almost intolerably funereal.

THE President (Mr. G. J. Smith) took occasion to advise the adoption in Cornish mines of improved machinery, with which more rapid results could be obtained. There is nothing new in this suggestion, which has been persistently dinned into the ears of Cornish mine managers by their candid friends for years. There can be no two opinions as to the abstract soundness of this advice, but is it not, under existing circumstances, somewhat on a par with a suggestion that a consumptive pauper should take a yachting trip up the Mediterranean? Cornish mine adventurers are as alive as London capitalists to the fact that in some instances their machinery might be improved upon with excellent results, but the chief difficulty is that they lack the necessary means, almost all the capital, which the county can command within its own borders being required to keep the mines open. It is a question of cutting your coat according to your cloth. We fear that until some outside capital is made available for the purpose, it will be impossible to provide the improved appliances which are so doubt desirable. It is only fair to Cornish mine managers to say that when the necessary funds have been forthcoming they have adopted new types of machinery—witness the Californian stamps at Dolcoath, which afford by no means a solitary proof that those who have the direction of mining enterprises in the county are not so wedded to antediluvian methods, as some of their critics would have us believe.

THE decision of the committee which has charge of the recently-initiated Mine Accident Fund must commend itself to the many individuals who have for years desired to see a fund of this description in operation. The efforts of the promoters received a severe check almost at the initiation of the movement from fears as to the effect of the Employers' Liability Bill, but now that this difficulty has—at all events for the time—been removed, it is to be hoped that subscriptions will be readily forthcoming, and that their number may be so considerable as to place the fund on a really substantial basis.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

BAYLEY'S REWARD CLAIM.—Following cable, dated 3rd inst., has been received from Melbourne: "This week's run 400 ounces. Mine is looking well."

GUADALCÁZAR QUICKSILVER.—The quantity of quicksilver drawn off during the week ending April 26, as cabled from the mines, amounts to 2600 lbs., equal to 34½ flasks.

MABELLA IRON ORE.—The directors have received the following telegram from the mines:—"Output of ore for April 1027 tons."

MILL'S DAY DAWN UNITED.—The directors have received the following cablegram from the directors, referring to the establishment of a London register:—"The opening of a London register has been arranged, and the necessary powers of attorney will be sent by first mail."

MOUNT MORGAN.—The directors have received the following telegram from the head office, Rockhampton:—"We pay £25,000 on May 3, being dividend of 6d. per share, free of dividend tax, for the month of April."

NEW QUEEN.—The directors have received the following cablegram, dated Charters Towers, April 28, giving result of crushing for past fortnight:—"195 tons, yielding 250 ounces gold. No. 4 formation 130 tons, yielding 170 ounces gold. Stopped crushing three days owing to heavy rains."

PAHANG CORPORATION.—The directors advise that the output of black tin from the mines during the months of November to February inclusive, weighing piculs 1468-23 (87 tons 8 cwt.) has now been sold in Singapore, realising \$35,232-10.

PESTARENA UNITED.—Gold return for April 1894, 626 ounces from 464 tons, equal to 1 ounce 7 dwts. per ton.

SHEBA.—The directors have received the following cablegram from the general manager for the month of April:—"3840 tons (2000 lbs. per ton) of ore crushed, yield 3965 ounces; 5600 tons (2000 lbs. per ton) of tailings, yield 3325 ounces; 80 tons (2000 lbs. per ton) of concentrates, assay value 686 ounces; total, 7976 ounces."

VICTORY (Charters Towers).—The London office has received the following cablegram from the head office in Sydney, dated this day:—"Crushing for fortnight from No. 1 shaft, 122 tons for 131 ounces; crushing for fortnight from No. 2 shaft, 270 tons for 289 ounces; total, 392 tons for 420 ounces of gold."

VICTORIA GOLD MINING ASSOCIATION.—The fortnightly crushing has been cabled as follows:—"272 tons crushed, yielded 590 ounces gold."

TOLIMA.—The directors have received the following cable from our mines:—"Estimated profit for April £2800. (Silver valued at 27d. per ounce). 140 east valued at £120 per fathom. Output is now reduced to 180 tons per month."

EL CALLAO.—Messrs. Baring Brothers and Co. (Limited) have received the following telegram:—"1151-1175 ounces of gold produced by El Callao Mine for last month, and 1801-1835 ounces by the Colombia Mine for same period."

UNITED IVY REEF.—The crushing for last month yielded 352 ounces. The tailings produced 126 ounces, and there was a balance of 51 ounces from March tailings, the total being 429 ounces.

ELKHORN.—Bullion produced in the mill for the week ending April 28, 8900 ounces.

CITY AND SUBURBAN.—Cable dated May 2: "Last month's crushing yielding 3507 ounces."

JAY HAWK AND LONE PINE CONSOLIDATED.—The directors have received the following telegram from the manager, viz: "Pipes connected; water running; mill starts running this week."

KABONGA.—The following cablegram has been received from the manager at the mine: "Rise south-west drive 13 feet. Hope will be able to cable good news in a short time. South-east drive 1230 feet."

BALAGHAT MYSORE.—The directors have received a telegram from Captain Pryor giving the return of gold for the month of April as follows: "360 tons of quartz produced 443 ounces of gold."

MOUNT LEYSHON.—The Mount Leyshon (Limited) have received the following cablegram, dated 2nd inst., from their manager at Charters Towers, giving the fortnightly crushing:—"1300 tons crushed 271 ounces gold, 30 stamps out of 40 ran 288 hours; profit £115."

VICTORIA AND QUEEN GOLD.—The London office has received the following cablegram from the head office in Charters Towers, May 4:—"A call of 1s. per share has been made payable 17th May. Have finished putting up machinery."

ORION.—The following information has been received by cable:—"Crushings for April: Plates, 1250 ounces; cyanide, 1750 ounces."

BRILLIANT BLOCK.—The directors have received the following cablegram from the head office in Charters Towers:—"Have crushed during the fortnight 638 tons of quartz for 969 ounces of gold. Have declared a dividend of 9d. per share, payable Monday, May 7." The approximate value of this return is £3340.

TWIN LAKES PLACERS.—Advice by cable has been received from the mine that washing commenced about the 23rd ultimo, and that the following results had been obtained to the 1st inst.:—"Cubic yards of gravel washed, 21,000; square yards of bedrock exposed, 3300. In 1893 washing commenced on May 28th, being five weeks later."

OOREGUM.—The directors have received a telegram from the mine, dated 3rd May, giving last month's return of gold as follows:—"3079 tons of quartz produced 5173 ounces of gold, 3500 tons of tailings produced 835 ounces of gold, total production for the month 6008 ounces of gold. Old mill delayed by accident. No. 3 stamp mill will start 7th May."

WORCESTER EXPLORATION AND GOLD.—The returns for the month of March are as follows:—"20 stamps ran for 29½ days, crushing 956 tons from south reef, and 1116 tons from main reef, total 2072 tons, yielding 2378 ounces of gold, and from concentrates 295 ounces of gold."

CHAMPION REEF.—The directors have received a telegram from the mine dated May 4, giving last month's return of gold as follows:—"2089 tons of quartz, produced 3051 ounces of gold; 1000 tons of tailings, produced 243 ounces of gold; total production for the month, 3294 ounces of gold."—Office note: Owing to error in cable cipher February returns from tailings were reported as 78 ounces instead of 55 ounces.

HARRIETVILLE.—The directors have received the following telegram from the mine dated May 4, giving the result obtained during the past four weeks:—"500 tons—178 ounces."

TRANSVAAL GOLD EXPLORATION AND LAND.—The directors have received the following cablegram:—"Ore mined, 1700 tons; ore treated 925 tons, yielding 1325 ounces; tailings treated 725 tons, yielding 800 ounces; total for April, 2125 ounces; working costs, £3120."

NEW CHIMES.—The return for March, 1894, is as follows:—"40 stamps ran for 29½ days, crushing 4012 tons of ore, yielding 1833 ounces 9 dwts. of gold, and 50 tons concentrates, assaying 5½ ounces to the ton; 4130 tons tailings yielded 709 ounces 11 dwts. of gold."

VAN RYN ESTATE.—Result of 27 days' working, 40 stamps, 1500 ounces from 3400 tons.

KOFFYFONTEIN.—During the month of March 30,460 loads of yellow ground were hauled, 23,459 loads were washed, yielding 1261½ carats at an estimated expenditure of £1297 3s.

RUBIES: THEIR NATURE, ORIGIN, AND METAMORPHOSES.

LECTURE by PROFESSOR J. W. JUDD, F.R.S. V.P.G.S.

In his first lecture on "Rubies," at the Royal Institution, on Tuesday, Professor Judd brushed aside all the romance associated with famous jewels and their history as of insignificant interest compared with the fascinating actualities which science has discovered in regard to the wonderful gem family—the aristocrats of the mineral kingdom. Eight years ago we were very excited in England over the annexation of Burma, and there were great expectations of what was to be found when the riches of King Thebaw's palace were brought to light. Somehow or other these expectations have not been gratified. The rubies were not forthcoming, but it is not to be presumed from this that Burma has enjoyed a false reputation for those remarkable stones of price. Professor Judd showed that while the ruby and its near relations are found in many parts of the globe, it is in Burma alone that the gem is unearthed in its purest colour and most fiery form. The intense "pigeon's blood" colour and peculiar "fire" of the Burmese ruby give it pre-eminence over rubies from other parts of the world. At the same time the true ruby was far superior as compared with other red stones which come into rivalry with it, for under the name of "rubies" there have been included a great variety of gems not truly entitled to the name both in ancient and modern times. The only substance which can truly be called "ruby" is pure, limpid, fiery red corundum. This mineral, corundum, is crystallised oxide of aluminium, and forms the basis of every gem of this family, which we value for hardness, brilliancy, and colour. A crystal of pure red corundum we call a "ruby," a crystal of the blue variety is prized as a "sapphire," a bright green crystal is known as "Oriental emerald," and other tints are known as "Oriental aqua-marina," "Oriental topaz," and so on. Corundum is found very widely distributed in other parts of the East, especially in Ceylon, Tibet, and Afghanistan, and in the United States big masses of impure blood-red corundum are found, from which isolated crystals can be cut, and thus entitle the Americans to claim the ruby as a native product. There are a great many red rubies to the ruby, but with the exception of the red diamond none are so hard. They include the red spinel, the rose topaz, red zircon, rubellite (a form of tourmaline more prized in China than the ruby), and the various garnet and rose quartz. This quality of hardness is one of the most valuable features in the ruby, for it enables the gem to take and retain a high polish. The diamond is, of course, harder, and it is interesting to note that one of the products recently evolved from the electrical furnace—a crystallised compound of carbon and silicon—is only less hard than the diamond itself. The chief scientific interest of the ruby, including corundum, flows from the extraordinary peculiarities of structure that it presents, as well as from the mysterious qualities that determine its striking properties. It is found in crystals of a great variety of shapes, but all having a tendency to the peculiar habit of growth known to crystallographers as "twinning." By testing crystals of corundum with polarised light, its structure is found to be wonderfully complex, and under the microscope, its exterior face is covered with a strange network of sculpture, indicative of chemical changes, which Professor Judd will explain in a later lecture. But probably the most interesting thing about the corundum crystal is the fact that it is nearly always found to have enclosed and surrounded some foreign body or other, which lies imprisoned in its midst. Stranger still is the fact that these "included" foreign bodies lie generally disposed in planes cutting each other at angles of 60 degrees, the result being to produce the phenomenon of "asterism," which is the term given to the white star-shaped star of light which is observable on certain jewels cut with a rounded surface. Very frequently the imprisoned body is a minute bubble of gas or drop of liquid, containing sometimes little crystals of its own. The microscopic cavities containing these things are often very numerous. For a long time the nature of the gas and fluid contained in the cavities remained a mystery. Our own philosopher, Brewster, was induced to investigate the subject by hearing that a ruby which an Edinburgh jeweller had placed in his mouth had exploded while in that position with unpleasant results. Other investigators followed, and it has now been made certain that the fluid is no other than liquid carbonic acid gas, reduced to that condition by being under great pressure. The colour of the ruby is another of its mysteries, and one which Professor Judd was only able to touch upon slightly in his lecture. The colour is distributed most irregularly, and some corundum crystals show in patches the tints of the ruby, the sapphire, and the emerald all mixed up together. These colours are, of course, due to the special way in which the structure of the crystal deals with the light passing through it, the ruby absorbing all the rays except those which emerge to give it its characteristic colour. How greatly these colours depend on molecular and chemical changes going on in the crystals is obvious from the strange way some gems behave under light and heat. Professor Maskelyne mentions a diamond which, when taken out of the warm pocket and allowed to cool on the table, turned a beautiful red. Professor Judd startled his audience by declaring that the green glass panes used in the conservatories at Kew gradually changed through various shades of yellow to a distinct purplish hue under the prolonged action of light. Rubies changed their colour in a curious way under the action of heat. Some bluish rubies turn perfectly green, and on cooling regain their original tint, whilst the blue sapphire may turn white, and the yellow corundum crystal green. Then there is the strange property of "pleochroism" in the ruby family and its kindred; they exhibit different tints according to the side of the crystal you are examining.

The concluding experiments made by the lecturer, with apparatus kindly lent by Professor Crookes, were most significant. Some amorphous powdered oxide of aluminium was placed in a vacuum tube and subjected to the electrical discharge from a high tension coil. It was shown that the white powder glowed with the brilliant red of the ruby, and that the glow continued after the discharge ceased—a fact which seems in curious confirmation of the ancient idea that rubies would glow for a time in the dark. The same experiment was repeated with a variety of corundum stones, artificial rubies, and other minerals, to show the greater or less degree of glow exhibited by each.

THE METAL MARKETS.

LONDON METAL MARKET.

THE METAL MARKET—LONDON, MAY 4.

Copper.

The present week has been signalised by a further relapse in G.M.B.'s to prices lower than any on record since those which immediately succeeded the collapse of the French syndicate. G.M.B. values remain, notwithstanding the fall, out of all proportion dear as compared with refined sorts, and as there are still heavy speculative prompts coming on the feeling on the part of speculators grows more despondent. On Monday the G.M.B. market opened dull at £39 18s. 3d. s.c., £39 17s. 6d. was paid later, but the turnover was extremely restricted. On Tuesday the Exchange was closed. On Wednesday the statistics (shown on page 491) were published, revealing a slight increase in the visible supplies for the past month. In the complete absence of speculative enquiry, values dropped quickly, until at the close of the day the cash price had reached £39 7s. 6d. Thursday's market brought no essential change, though £39 10s. was paid for early dates during a momentary firmness; and to-day, after business at £39 11s. 3d. to £39 8s. 9d. s.c., we close steady at £39 10s. to £39 11s. 3d. s.c. and £39 18s. 9d. to £40 three months.

Tin.

The statistical figures for April show a decrease of about 900 tons in the visible European supply, spot and afloat, and this feature, combined with a further rise in silver has resulted in a fresh advance of values in the tin market. Spot straits opened at £71, and rose to £71 5s. on Monday, whilst three months changed hands at £72 5s. Tuesday was a blank day, but on Wednesday s.c. straits rapidly jumped to £72 15s. and three months to £73 10s. Thursday's market was considerably easier with a relapse to £72 s.c., and £72 12s. 6d. three months, and to-day, after business, at £71 15s. s.c. we close firm at £71 17s. 6d. to £72 s.c., and £72 10s. to £72 12s. 6d. three months. Billiton tin opened at 43½ fl. spot, and rose to 44 fl., at which it closes with three months at 44½ fl.

Pig Iron.

The shipments from Scotland last week were 6490 tons, or 1767 tons under those of last year, same period. The Glasgow market opened at 42s. 8d. Scotch s.c., and declined to 42s. 5d. on Wednesday, and 42s. 2d. to-day. The market closes flat at 42s. 2d., Sellers with hematite at 44s. 3d., and Cleveland at 35s. 7d. As usual, the London market has been quite a dead letter.

Lead.

is a decidedly dull market; demand is stagnant, and the closing values are £9 to £9 2s. 6d. soft foreign, and £9 2s. 6d. to £9 3s. 9d. English.

Spelter.

has remained very steady all the week, and closes quiet £15 12s. 6d. ordinaries, £15 15s. to £15 17s. 6d. specials.

Antimony.

is very dull, and the present quotation is £34.

Quicksilver.

This article has grown much firmer, and the first hand price has been raised to £6, seconds close at 1s. less.

The following are to-night's (May 4) prices of metals:—

| | Copper. | £ s. d. | £ s. d. |
|---|-------------------------------|---------|---------|
| Tough cake and ingot | ... | 41 15 0 | 42 5 0 |
| Best selected | ... | 42 15 0 | 43 5 0 |
| Sheets and sheathing | ... | 50 10 0 | 51 10 0 |
| Flat bottoms | ... | 53 10 0 | 54 10 0 |
| Chill bars | ... | 39 8 9 | 39 13 9 |
| Good merchantable, | spot, & 3 months respectively | 39 8 9 | 39 13 9 |
| Copper tubes, seamless | ... | ... | 0 0 7½ |
| Alloys. | | | |
| BRASS: Wire | ... | ... | 0 0 8½ |
| " Tubes (solid drawn) | ... | ... | 0 0 8½ |
| " Sheets | ... | ... | 0 0 8½ |
| PHOSPHOR BRONZE: Alloys II. | ... | ... | 93 0 0 |
| " III. or V. | ... | ... | 93 0 0 |
| " VI. | ... | ... | 93 0 0 |
| " (in Holland) | ... | ... | 93 0 0 |
| " VII. | ... | ... | 93 0 0 |
| " VIII. | ... | ... | 93 0 0 |
| " Vulcan brand Al B.C. | ... | 80 0 0 | 85 0 0 |
| DURO METAL | ... | 80 0 0 | 85 0 0 |
| BULL'S METAL | ... | ... | 70 0 0 |
| Ferrobronze (Vivian's). | | | |
| Ingots | per lb. | 0 0 5½ | ... |
| Ordinary sheets, plates, bolts and bars | ... | 0 0 6½ | ... |
| Screw bolts and nuts | ... | 0 0 6½ | ... |
| Pump rods, plain | ... | 0 0 7½ | ... |
| " finished | ... | 0 0 10½ | ... |
| DELTA METAL: No. 4 (per ton) | ... | 0 0 10½ | 73 10 8 |
| " Sheets and plates (per lb.) | ... | 0 0 9½ | ... |
| " Bars, round, square, flat (per lb.) | ... | 0 0 9½ | ... |
| " hexagon (per lb.) | ... | 0 0 9½ | ... |
| Tin. | | | |
| English, ingots, f.o.b. | ... | 76 10 0 | 77 0 0 |
| " bars | ... | 77 10 0 | 78 0 0 |
| " refined | ... | 78 10 0 | 79 0 0 |
| " spot and 3 months respectively | ... | 71 7 6 | 72 10 0 |
| Australian spot, and three months respectively | ... | 75 7 6 | 76 10 0 |
| " (in Holland) | ... | 75 7 6 | 76 10 0 |
| BRASS: Charcoal, best quality | per box | 0 16 0 | 0 18 0 |
| " ordinary | ... | 0 14 0 | 0 15 0 |
| " Coke, best quality | ... | 0 10 9 | 0 11 6 |
| " ordinary | ... | 0 10 0 | 0 10 3 |
| These prices of tinplates are f.o.b. at Swansea; at Liverpool 6d. per box more. | | | |
| Iron. | | | |
| Pig, G.M.B., f.o.b., Clyde, spot | ... | ... | 2 2 2 |
| " Scotch pig, No. 1 Gartsherrie | ... | ... | 2 11 0 |
| " " Coltness | ... | ... | 2 16 0 |
| " " Clyde | ... | ... | 2 4 0 |
| " " Govan | ... | ... | 2 5 0 |
| Bars, Welsh, f.o.b. Wales | ... | ... | 6 0 0 |
| Plates | ... | ... | 6 7 0 |
| Bars, Staffordshire, at works | ... | ... | 6 10 0 |
| Sheets | ... | ... | 6 7 0 |
| Plates | ... | ... | 6 15 0 |
| Hoops | ... | ... | 4 18 0 |
| Ship plates, Middlesbrough | ... | ... | 20 0 0 |
| STEEL: English spring... nominal | according to quality | 11 0 0 | 20 0 0 |
| " cast | ... | 38 0 0 | 42 0 0 |
| " Rails at works, according to section | ... | 3 12 6 | 4 15 0 |
| Lead. | | | |
| Spanish or soft foreign | ... | 9 0 0 | 9 2 6 |
| English pig, common | ... | 9 1 3 | 9 3 6 |
| " L.B. | ... | ... | 10 2 6 |
| " sheet and bar | ... | ... | 10 12 6 |
| " pipe | ... | ... | 12 0 0 |
| " red | ... | ... | 16 0 0 |
| " white | ... | ... | 13 10 0 |
| " patent sheet | ... | ... | ... |
| Spelter. | | | |
| Silesian ordinary brands | ... | 15 15 0 | 15 17 6 |
| " special brands | ... | 16 5 0 | 16 7 6 |
| English Swanses | ... | 18 10 0 | 18 15 0 |
| Sheet Zinc | ... | ... | ... |
| Antimony. | | | |
| Antimony | ... | ... | 34 0 0 |
| Quicksilver. | | | |
| Flasks, 75 lbs. warrants | ... | 5 19 0 | 5 19 6 |
| Ore, c.i.f., U.K. ports | per unit. | ... | ... |
| 1st quality, 50 per cent. and upwards | ... | 0 0 10½ | 0 0 11½ |
| 2nd " 47 per cent. to 50 per cent. | ... | 0 0 8½ | 0 0 10½ |
| 3rd " 45 " 47 per cent. | ... | 0 0 8 | 0 0 10½ |
| Aluminium. | | | |
| 95-98½ per cent. (guaranteed 98 per cent. min.) in ingots (1 cwt. lots) | ... | 0 2 0 | 0 2 0 |
| " do " do (5 cwt. and up) | ... | 0 1 11 | 0 1 11 |
| Nickel. | | | |
| 95-99 per cent. guaranteed | ... | 0 1 7½ | 0 1 8½ |

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—A, Antimony; A, Arsenic; B, Blende; Br, Borax; C, Copper; D, Diamond; G, Gold; I, Iron; L, Lead; M, Manganese; N, Nitrates; P, Phosphates; Q, Quicksilver; R, Ruby; S, Silver; S-L, Silver-lead; Sul, Sulphur; T, Tin; and Z, Zinc. * In the "called up" column of British Mines, signifies that the mine is conducted on "Cost Book" principles; † in the "Head Office" column of African Mines, signifies that the address given is not that of the head office, but of a sub- or transfer office and ‡ following the names of African mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

† The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that, while our Share List will almost invariably be found correct; we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.

BRITISH MINES.

| Name. | Closing Price, May 4, 1894. | Closing Price, Apr. 27, 1894. | Par. | Latest Dividend | Called up Per Share. | Shares Issued. | Situation of Mine. | Head Office. |
|----------------------------|-----------------------------|-------------------------------|---------|-----------------|----------------------|----------------|----------------------|-------------------------|
| Atlas | — | — | £ s. d. | — | £ s. d. | 12,000 | Devon | Camborne. |
| Blue Hills | 1/1- 3/4 | 3/4 | — | 2/- May '81 | 5 9 6 | 5,353 | Cornwall | Camborne. |
| Botallack | 3/4 3/4 | 3/4 | — | — | 51 4 6 | 1,220 | Cornwall | St. Just. |
| Carn Breva | 11 11 1/4 | 11 | — | 2/6 Dec. '93 | 21 12 5 | 6,000 | Cornwall | Carn Breva. |
| Cook's Kitchen | 15/- 20/- | 22/6 | — | 5/- May '88 | 35 5 10 | 4,900 | Cornwall | Camborne. |
| Cumberland | — | — | 1 0 | — | 1 0 0 | 51,988 | Cumberland | 7, Angel-court E.C. |
| Derwentwater, CLZ | — | — | 1 0 | — | 1 0 0 | 10,500 | Cumberland | Manchester. |
| Devon St. Cons. CA | 7 1/2 1 1/2 | 7 1/2 | 5 0 | 3/- Nov. '93 | 2 0 0 | 10,240 | Devon | 3, Pinesbury-circus. |
| Dolcoath | 77 7/8 | 73 1/2 | — | 12/6 Apr. '94 | 9 12 6 | 4,700 | Cornwall | Camborne. |
| Drakewalls CTM | -8 -9 | -8 | 5/- | — | 0 2 0 | 61,856 | Cornwall | Dashwood House. |
| East Gravington L | — | — | 1 0 | — | 1 0 0 | 19,905 | Yorkshire | Palmerston-building |
| East Pool | 10 1/2 11 1/2 | 11 1/2 | — | 3/- April '94 | 0 9 9 | 6,400 | Cornwall | Illogan. |
| Gawton | — | — | 50/- | — | 2 7 2 | 12,000 | Devon | 26, Great St. Helens. |
| Great Laxey | 2 3 | 3 | 4 0 | 5/- Apr. '92 | 4 0 0 | 15,000 | Ile of Man | Douglas, Isle of Man. |
| Green Hurth | 1/3 1/3 | 1/3 | 1 0 | -6 June '89 | 0 19 0 | 32,000 | Cumberland | Newcastle. |
| Halkyn | — | — | 1 0 | 2/- Sep. '93 | 1 0 0 | 10,000 | Flintshire | Chester. |
| Hexworthy | — | — | 1 0 | — | 1 0 0 | 14,634 | Devon | 6, Queen-street-place |
| Ile of Man | — | — | 8 0 | 5/6 Sep. '93 | 5 0 0 | 14,000 | Ile of Man | Chester. |
| Killfretth | 3 1/4 3 1/4 | 2 1/4 | — | 3/6 Dec. '93 | 5 11 6 | 6,000 | Cornwall | Truro. |
| Kingside | — | — | 1 0 | 3/- May, 1892 | 1 0 0 | 15,919 | Cardiganshire | 6, Queen-street-place |
| Lead Hills | 17/6 22/6 | 22/6 | 6 0 | 3/- Sep. '92 | 6 0 0 | 20,000 | Lanarkshire | 30, Finsbury-circus. |
| Lavant | — | — | — | 5/- Dec. '93 | 11 9 6 | 2,500 | Cornwall | Penzance. |
| Lovell | — | — | — | 1/3 Nov. '91 | 1 16 7 | 7,165 | Wendron | 2, Queen-street, S.W. |
| Minera (New) | — | — | 5 0 | 5/6 Mar. '90 | 0 0 0 | 9,000 | Denbighshire | Minera, N. Wales. |
| Northdown L | -8 1/- | 1/- | 1 0 | 6 1/2 Feb. '91 | 0 18 0 | 48,8 5 | Northumberland | Newcastle-on-Tyne |
| New Balfour L | — | — | 1 0 | — | 1 0 0 | 25,000 | Cornwall | St. Clement's Ho., E.C. |
| New Cocks L | — | — | — | — | 10 13 3 | 4,900 | Cornwall | Camborne. |
| New Cocks L | — | — | — | — | 4 3 6 | 7,000 | Cornwall | Redruth. |
| Phoenix United TC | 6/- 7/- | — | — | 1/- Mar. '90 | 6 19 6 | 10,665 | Cornwall | Liskeard. |
| Polbarro | 22/6 25/- | 25/- | — | — | 3 9 9 | 18,000 | Cornwall | 37, Walbrook. |
| Prince of Wales TC | 2/- 3/- | 3/- | 10/- | — | 94,287 | — | Cornwall | 6, Draper's-gardens. |
| So. Condurrow TC | 12/6 | 12/6 | — | 3/6 Apr. '93 | 7 12 7 | 34,330 | Cornwall | 20, Great St. Helens |
| South Crofty TC | 2 3/4 3 1/4 | 3 1/4 | — | — | 17 2 6 | 6,120 | Cornwall | Penel, Cornwall. |
| St. Francis Unid. TC | 1 1/2 1 1/2 | 1 1/2 | — | — | 2 7 6 | 6,000 | Cornwall | Redruth. |
| Tincroft | 12 1/2 13 | 12 1/2 | — | 2/- Apr. '94 | 15 7 6 | 6,000 | Cornwall | Carn Breva. |
| Westward L | 8/- 9/- | 9/6 | 4 0 | 1/3 Oct. '90 | 1 10 0 | 60,000 | Durham | 3, Lombard-court. |
| West Frances | 2 3/4 3 1/4 | 3 1/4 | — | 2/6 May '89 | 15 17 1 | 6,144 | Cornwall | Camborne. |
| West Kitty | 6 1/2 6 1/2 | 7 | — | 4/- Jan. '94 | 0 12 0 | 6,000 | Cornwall | 37, Walbrook. |
| Wharfedale | 2 1/2 3 | 3 | — | 2/6 Aug. '94 | 23 5 2 | 6,000 | Cornwall | Redruth. |
| Wharfedale | 2 1/2 3 | 3 | — | 10/- Apr. '88 | 12 5 0 | 6,144 | Cornwall | Redruth. |
| Wharfedale | 2 1/2 3 | 3 | — | — | 0 11 3 | 10,000 | Cornwall | 37, Walbrook, E.C. |
| Wharfedale | 2 1/2 3 | 3 | — | 3/- Feb. '94 | 18 2 0 | 6,000 | Cornwall | 7, Union-court, E.C. |
| Wharfedale | 2 1/2 3 | 3 | — | 3/- Mar. '88 | 4 5 6 | 6,000 | Cornwall | Truro. |
| Wharfedale | 2 1/2 3 | 3 | — | — | 0 13 9 | 10,784 | Cornwall | 7 1/2, Gracechurch-st. |

NORTH AMERICAN MINES.

| Name. | Closing Price, May 4, 1894. | Closing Price, Apr. 27, 1894. | Par. | Latest Dividend | Called up per Share. | Shares Issued. | Situation of Mine. | Head Office. |
|-----------------------|-----------------------------|-------------------------------|------|------------------|----------------------|----------------|--------------------|------------------------|
| Almaden and T. S. S. | -3 -9 | -9 | 2/6 | — | 0 2 6 | 351,000 | Mexico | 8, Queen-street-place |
| American Belle S. | 1/9 2/3 | 2/3 | 1 0 | -6 Mar. '91 | 1 0 0 | 400,000 | Colorado | 25A, Old Broad-street. |
| Big Creek | — | — | 1 0 | 1/- Dec. '91 | 1 0 0 | 80,038 | Nevada | 2, Pancoast-lane, E.C. |
| California | — | — | 10/- | -6 May '90 | 0 8 9 | 129,734 | Colorado | St. George's Ho. E.C. |
| Canada Phos. P. | — | — | 3/4 | -6 Nov. '90 | 1 0 0 | 73,334 | Canada | 155, Fenchurch-st. |
| Chapman | — | — | 1 0 | — | 1 0 0 | 221,876 | Mexico | 33, Broad-st. Av. E.C. |
| Colorado Silver S. | — | — | 1 0 | — | 1 0 0 | 112,491 | Colorado | Abchurch-chbrs. E.C. |
| Cortez | — | — | 1 0 | 3 1/2 Feb. '93 | 1 0 0 | 300,000 | Nevada | Suffolk House, E.C. |
| De Lamar | 18/- 19/- | 21/- xdb | 1 0 | 1/- April '94 | 1 0 0 | 4,000 | Idaho | 6, Draper's-gardens. |
| Dickens Custer GS. | — | -3 | 1 0 | — | 0 19 9 | 420,000 | Idaho | Winchester Ho. E.C. |
| Elkhorn | 22/6 13/3 | 13/- | 1 0 | -9 Mar. '94 | 1 0 0 | 175,007 | Montana | 6, Draper's-gardens. |
| Emma | -7 1/2 -8 | -8 | 5 0 | — | 0 5 0 | 367,798 | Utah | 15, Geo-st, Mann. Ho. |
| Flagstaff | -3 -9 | -8 | 1 0 | — | 0 19 3 | 240,000 | Utah | Dashwood Ho., E.C. |
| Golden Feather G. | 7/3 7/6 | 7/6 | 1 0 | -6 Dec. '88 | 0 19 6 | 98,185 | Nevada | Suffolk House, E.C. |
| Golden Gate | 6/- 7/- | 6/6 | 1 0 | — | 0 19 0 | 79,500 | California | 8, Stephen's Co. E.C. |
| Gold Leaf | -9 1/3 | 1/3 | 1 0 | — | 1 0 0 | 100,259 | Montana | 8, Stephen's Co. E.C. |
| Golden Valley | — | — | 1 0 | — | 1 0 0 | 65,507 | Colorado | 8, Draper's Gardens. |
| Harquahala | 15/- 15/6 | 17/6 | 1 0 | -6 Apr. '94 | 1 0 0 | 300,000 | Arizona | 6, Drap. 's Gardens. |
| Ho Comb Valley G. | 1 1/2 1 1/4 | 1 1/4 | 5 0 | -9 Oct. '93 | 0 5 0 | 300,000 | California | 14, Cornhill E.C. |
| Idaho | 1 1/8 1/8 | 2/- | 1 0 | — | 0 4 8 | 143,439 | Idaho | 14, Cornhill E.C. |
| Jackson Goldfields | 6/- 7/- | 7/- | 1 0 | -6 Dec. '92 | 1 0 0 | 405,835 | California | 7, Drapers' Ho. |
| Jay Hawk | — | — | 1 0 | -6 Dec. '92 | 1 0 0 | 285,000 | Montana | Dashwood House. |
| Kohinoor "B" GS. | — | — | 1 0 | 1/3 Oct. '92 | 0 4 3 | 405,000 | Colorado | 15, Angel-court, E.C. |
| La Plata | -8 -9 | -9 | 5 0 | 1/3 Oct. '92 | 0 4 3 | 405,000 | Colorado | 15, Angel-court, E.C. |
| Maid of Erin | — | — | 1 0 | 4c. pub Mar. '94 | 1 0 0 | 575,000 | Colorado | 43, Thredneedle-st. |
| Mammoth Gold | — | — | 1 0 | — | 1 0 0 | 400,000 | Pinal Arizona. | 257, Winchester Ho. |
| Mesa, d'l Oro (P) G. | 3/4 1 | 1 | 5 0 | — | 5 0 0 | 10,000 | Mexico | Winchester Ho., E.C. |
| Mesa, d'l Oro (D) G. | 3/4 3/4 | 3/4 | 5 0 | — | 5 0 0 | 10,000 | Mexico | Dashwood Ho., E.C. |
| Montana | 4/8 5/- | 6/3 | 1 0 | 5 1/2 April '91 | 0 19 0 | 657,159 | Montana | Gresham House, E.C. |
| New Colorado | — | — | 1 0 | — | 0 17 0 | 65,000 | Idaho | Abchurch-chbrs. E.C. |
| N. Consolidated SC. | — | — | 1 0 | — | 1 0 0 | 100,000 | Nevada | Eberhardt, U.S. |
| N. Eberhardt | — | — | 1 0 | — | 0 3 2 | 148,576 | Nevada | 15, Angel-court, E.C. |
| N. Gold Hill | — | — | 1 0 | — | 0 19 9 | 191,045 | N. Carolina | 15, George-st., E.C. |
| New Guelon | 8/- 8/- | 8/- | 1 0 | 1/- Oct. '92 | 1 0 0 | 110,000 | Colorado | 25A, Old Broad-st. |
| New London | — | — | 3/6 | — | 0 2 6 | 327,816 | New Carolina | 55, Bishop-st. E.C. |
| N. Hovey Hill G. | — | — | 10/- | -9 Dec. '85 | 0 10 0 | 120,000 | N. Carolina | Langthorne Ho., E.C. |
| Palmarejo | 1/3 1/6 | 1/6 | 1 0 | — | 1 0 0 | 4,888 | Mexico | 4, Cophall-buildings |
| Pinos Altos (N) GS. | 6/- 7/- | 6/- | 1 0 | -8 Mar. '90 | 1 0 0 | 160,000 | Mexico | 110, Cannon-street. |
| Pittsburg Con. (N) G. | 7/- 7/6 | 7/6 | 1 0 | 1/8 Mar. '88 | 1 0 0 | 77,147 | Nevada | Suffolk House, E.C. |
| Portman Con. | — | — | 5/- | — | 0 5 0 | 273,948 | Idaho | 5, Cophall-buildings |
| Red Mountain | 3/4 3/4 | 3/4 | 5 0 | 1/- Sep. '93 | 5 0 0 | 54,000 | Idaho | 5, Cophall-buildings |
| Richmond | — | — | 5/- | — | 0 5 0 | 221,371 | Nevada | 44, Coleman-street. |
| Ruby | — | — | 5/- | — | 0 5 0 | 221,371 | Nevada | 22, St. Mary Ave. |
| Sierra Butte | 8/- 10/- xdb | 3 1/2 xdb | 2 0 | -8 Apr. '94 | 2 0 0 | 122,500 | California | 138, Leadhall-st. |
| St. Plumas Eur. G. | 3 1/2 xdb | 3 1/2 xdb | 2 0 | -9 Apr. '94 | 2 0 0 | 40,265 | California | 138, Leadhall-st. |
| Springdale | 2/- 2/6 | 2/9 | 3 1 | 15 1/2 Dec. '92 | 3 1 | 1,000,000 | Colorado | 20, Abchurch Lane. |
| United Mexican S. | 1/- 1/8 | 1/8 | 1 0 | 2/6 May '93 | 1 0 0 | 606,654 | Mexico | 3, Gt. Winchester-st. |
| Viola (New) | — | — | 1 0 | — | 1 0 0 | 150,000 | Idaho | Broad-st. House, E.C. |

SOUTH AND CENTRAL AMERICAN MINES.

| Name. | Closing Price, May 4, 1894. | Closing Price, Apr. 27, 1894. | Par. | Latest Dividend | Called up per Share. | Shares Issued. | Situation of Mine. | Head Office. |
|---------------------------|-----------------------------|-------------------------------|------|------------------|----------------------|----------------|--------------------|----------------------------|
| Antio (Prof.) G.S. | — | — | 1 0 | -6 Mar. '90 | 1 0 0 | 22,821 | Colombia | 184, Gresham House |
| Antioquia (ord.) | — | — | 1 0 | — | 1 0 0 | 42,453 | Colombia | 184, Gresham House |
| Callao B.L. | -9 1/3 | 1/3 | 1 0 | — | 1 0 0 | 316,248 | Venezuela | 50, Old Broad-street. |
| Camaron | — | — | 2 0 | — | 2 0 0 | 67,000 | Chili | 123, Bishopsgt. Wn. |
| Caralita | -5 -7 | -7 | 2 0 | — | 0 2 6 | 1,330,000 | Venezuela | 57, Moorgate-st. E.C. |
| Colon | -6 -8 | -8 | 1 0 | — | 1 0 0 | 200,000 | Colombia | 5, Cophall-buildings, E.C. |
| Colorado Ht. N. | 3 1/2 3 1/2 | 3 1/2 | 5 0 | 7/6 May '89 | 5 0 0 | 32,000 | Chili | 12, King-st., Liverpool. |
| Colombian Nit. G. | 15/6 16/6 | 16/6 | 1 0 | 1/- April '94 | 1 0 0 | 75,000 | Colombia | 10, Blomfield-street. |
| Copapo | 1 1/2 1 1/2 | 1 1/2 | 2 0 | 2/- Dec. '93 | 1 0 0 | 100,000 | Chili | Dashwood House, E.C. |
| Darien | 2/- 2/- | 3/- | 1 0 | — | 1 0 0 | 71,359 | Colombia | Manchester. |
| Don Pedro | 3/4 3/4 | 3/3 | 1 0 | — | 1 0 0 | 133,102 | Brazil | 24-5, Devonsh. Co. E.C. |
| El Callao | 1 1 1/4 | 1 1/4 | 5 0 | 2 fre. Nov. '90 | 5 0 0 | 267,600 | Venezuela | 8, Bishopsgt. St. Wn. |
| Frontino & B. G. | 19/6 20/- | 20/- | 1 0 | 1/6 Dec. '93 | 0 19 6 | 128,662 | Colombia | 184, Gresham House |
| Glenrock | 2/- 2/6 | 2/3 | 1 0 | — | 0 18 6 | 199,948 | Argen. (& Ind) | 3-5, Queen-street, E.C. |
| Glenrock (Prof.) | 5/6 6/6 | 6/6 | 1 0 | — | 0 16 0 | 16,332 | Argen. (& Ind) | 3-5, Queen-street, E.C. |
| Gravel | — | — | 1 0 | — | 0 19 6 | 100,000 | Colombia | 10, Blomfield-street. |
| Javali | — | — | 3/- | 8 1/2 % '91 | 0 2 0 | 105,234 | Nicaragua | 139, Cannon-street. |
| Julia Nit. | 7/- 9/- | 5/- | 5 0 | 27 % Oct. '89 | 5 0 0 | 30,000 | Chili | 79 1/2, Gracechurch-st. |
| Lautaro | 4 1/2 4 1/2 | 4 1/2 | 5 0 | 5/- Jan. '94 | 5 0 0 | 55,000 | Chili | 70, Gracechurch-st. |
| Liverpool | — | — | 10/- | 10/- Feb. '94 | 5 0 0 | 22,000 | Chili | Liverpool. |
| Loma | 1/- 1/3 | 1/3 | 1 0 | — | 5 0 0 | 300,000 | Colombia | 5, Cophall-buildings |
| London Nit. | — | — | 3 0 | 3 1/4 % Nov. '89 | 5 0 0 | 10,000 | Chili | 9, Gracechurch-st. |
| London Nit. (Prof.) | 2/- 3/- | 2/9 | 2 0 | 11/- Nov. '94 | 5 0 0 | 22,000 | Chili | 9, Gracechurch-st. |
| Mosote | 2/- 2/6 | 2/6 | 1 0 | — | 1 0 0 | 30,000 | Peru | 11, Old Broad-st. E.C. |
| Orita | — | — | 1 0 | 1/- April '93 | 1 0 0 | 80,000 | Colombia | 10, Blomfield-street. |
| Ouro Preto | — | — | 1 0 | — | 0 18 6 | 80,000 | Brazil | 6, Queen-street-place |
| Panulillo | — | — | 2 0 | 1/- Nov. '89 | 2 0 0 | 112,500 | Chili | 13, Great St. Helens |
| Primitiva | 4 1/2 4 1/2 | 4 1/2 | 5 0 | 27 % Oct. '89 | 5 0 0 | 40,000 | Chili | Liverpool. |
| Quadrada | 3 1/2 3 1/2 | 3 1/2 | 5 0 | 3 1/2 % Mar. '92 | 5 0 0 | 221,566 | Venezuela | 38, Nicholas Lane. |
| Rosario | 4 1/2 4 1/2 | 4 1/2 | 5 0 | 3 1/2 % Feb. '94 | 5 0 0 | 120,000 | Chili | 54, Old Broad-street. |
| Rosario (S) Deb. | 22/6 23/6 | 1 1/4 | 1 0 | 10 % June '92 | 1 0 0 | 273,435 | Brazil | 57 1/2, Old Broad-street. |
| San Jorge | 1 1/2 2 | 2 | 5 0 | — | 5 0 0 | 32,000 | Chili | 28, Tower-chbrs. E.C. |
| San Donato | 6 1/2 6 1/2 | 6 1/2 | 5 0 | 10/- May '94 | 5 0 0 | 75,000 | Chili | 12, King-st., Liverpool. |

"THE MINING JOURNAL" SHARE LIST (African Mines continued).

| Name. | Closing Price, May 4, 1894. | Closing Price, Apr. 27, 1894. | Par. | Latest Dividend. | Called up Per Share. | Shares Issued. | Situation of Mine. | Head Office. | Name. | Closing Price, May 4, 1894. | Closing Price, Apr. 27, 1894. | Par. | Latest Dividend. | Called up Per Share. | Shares Issued. | Situation of Mine. | Head Office. |
|--------------------|-----------------------------|-------------------------------|------|------------------|----------------------|----------------|--------------------|------------------------|----------------------|-----------------------------|-------------------------------|-------|------------------|----------------------|----------------|--------------------|-------------------------|
| Joe's Luck.....G | 1/6 2/6 | 2/8 | 1 0 | — | 1 0 | 57,404 | De Kaap | 11, Queen Vic.-st. | Piggs Peak, New G | 3/- 4/- | 4/- | 1 0 | — | 0 18 6 | 230,328 | Swaziland | 8, Queen-street-place |
| Jubilee.....G | 5 5/8 | 5 1/2 | 1 0 | 30% Apr. '94 | 1 0 | 30,000 | Witwatersdrt. | 8, Old Jewry. | Potchefstroom...G | 1/6 2/6 | 3/- | 1 0 | — | 1 0 0 | 181,000 | Potchefstroom | 19, Bury-st., E.O. |
| Jumpers.....G | 4 1/2 | 4 1/2 | 1 0 | 10% Jan. '93 | 1 0 | 100,000 | Witwatersdrt. | 29, Holborn-Viaduct | Princess Estate G | 1 1/2 | 24/- | 1 0 | — | 1 0 0 | 72,046 | Witwatersdrt. | 33, Cornhill, E.O. |
| Kleinfontein...G | 30/- 32/6 | 34 | 1 0 | — | 1 0 | 150,000 | Transvaal | 110, Cannon-street. | Randfontein.....G | 15/- 16/- | 18/- | 1 0 | — | 1 0 0 | 1,966,500 | Witwatersdrt. | 59, Holborn-Viaduct |
| Klerksdorp.....G | 1/3 1/8 | 1/3 | 1 0 | — | 1 0 | 1-0 007 | Transvaal | 110, Cannon-street. | Read's Drift.....G | 9/- 13/- | 10/- | 1 0 | — | 1 0 0 | 50,000 | Transvaal | 19, Finsbury-circuit |
| Knight.....G | 15/- 16/- | 16/- | 1 0 | — | 1 0 | 250,000 | Witwatersdrt. | 19, Bury-street, E.O. | Robinson.....G | 5 5 1/2 | 8 | 5 0 | 4% June '93 | 5 8 0 | 543,750 | Transvaal | 55, Holborn-Viaduct |
| Langlaagte Est..G | 4 1/2 | 4 1/2 | 1 0 | 12 1/2% Mar. '94 | 1 0 | 467,000 | Witwatersdrt. | 59, Holborn-Viaduct | Roodpoort Un. G | 2 1/2 | 2 1/2 | 1 0 | — | 1 0 0 | 100,000 | Witwatersdrt. | Warnford-court |
| Libon-Berlyn...G | 2 3/8 | 3/6 | 2 6 | — | 0 16 | 887,233 | Lydenburg | 110, Cannon-street. | St. Augustine.....G | — | — | 1 0 | — | 1 0 0 | 465,000 | Grigoland W | 30-1, St. Smith's-lane |
| Luipards Vlei Est. | 11/- 11/8 | 11/8 | 1 0 | 6% Mar. '90 | 1 0 | 344,703 | Witwatersdrt. | 8, Old Jewry. | Salisbury New...G | 2 1/2 | 2 1/2 | 3 1/2 | — | 1 0 0 | 93,000 | Witwatersdrt. | 1, Crosby-square |
| Main Reef.....G | 1 1 1/4 | 1 1/4 | 1 0 | — | 1 0 | 300,000 | Witwatersdrt. | Warnford-court | Sheba.....G | 27/- 27/6 | 26/6 | 1 0 | -6 April '94 | 1 0 0 | 614,450 | Lydenburg | 85, Gracechurch-st. |
| Manica Ophir.....G | — | — | 1 0 | — | 1 0 | 90,000 | Mosambiqued. | 2, Pinner's Court. | Silati.....G | 3/6 4/- | 3/9 | 1 0 | — | 1 0 0 | 625,000 | Zoutpansberg. | 4, Sun Court, E.O. |
| May Consol.....G | 10/- 11/- | 11/- | 1 0 | — | 1 0 | 430,000 | Witwatersdrt. | 4, Lottbury-lane. | Simmer & Jack...G | 6 1/2 7 1/2 | 8 1/2 | 1 0 | 10% Nov. '92 | 1 0 0 | 85,000 | Witwatersdrt. | 33, Cornhill |
| May Deep Level G | 8/- 8/6 | 8/6 | 1 0 | — | 1 0 | 148,000 | Witwatersdrt. | 31, Cornhill, E.O. | S.A. Gold Trust...G | 18/6 19/6 | 19/6 | 1 0 | 10% April '93 | 0 10 0 | 20,000 | South Africa. | 2, Old Jewry |
| Metropolitan...G | 13/9 16/3 | 16/3 | 1 0 | — | 1 0 | 755,500 | Transvaal | 1, Crosby Square | Stanhope (New) G | 2/10 3/10 | 3/3 | 1 0 | — | 0 19 6 | 144,531 | Lydenburg | 15, Bishopsgate-st. Wt. |
| Meyer & Charl...G | 5 5/8 | 5 1/2 | 1 0 | 25% Dec. '93 | 1 0 | 71,687 | Witwatersdrt. | Warnford-court | Stanhope.....G | 1 1/2 | 1 1/2 | 1 0 | 50% May '93 | — | 34,000 | Witwatersdrt. | 1, Crosby Square |
| Mitchell.....G | 7/- 7/8 | 7/8 | 1 0 | — | 1 0 | 45,000 | Witwatersdrt. | Kimberley. | Sutherland R.....G | 4/- 4/6 | 4/6 | 1 0 | — | 0 18 0 | 220,000 | Zoutpansberg. | 3, Budge-row, E.O. |
| Modderfontein G | 8/6 9/6 | 9/6 | 1 0 | -4 May '90 | 1 0 | 240,000 | Witwatersdrt. | Warnford-court | Tautonia.....G | — | — | 1 0 | — | 1 0 0 | 96,000 | Witwatersdrt. | 8, Old Jewry |
| Moodies G. & E..G | 4/- 5/- | 5/- | 1 0 | — | 0 16 0 | 120,000 | De Kaap | 8, Old Jewry | Trans. Coal Trust..G | 12/3 12/9 | 13/6 | 1 0 | -8 Oct. '93 | 1 0 0 | 439,965 | Witwatersdrt. | Broad-t. House, E.O. |
| Moodies (15/- p.)G | — | — | 1 0 | — | 1 0 | 120,000 | De Kaap | 8, Old Jewry | Trans. Est. & Dev. | 10/6 11/6 | 11/- | 1 0 | — | 1 0 0 | 285,700 | Transvaal | 76, Old Broad-st. E.O. |
| Namaqua.....C | 15 1/2 | 15 1/2 | 2 0 | 2/6 July '91 | 2 0 | 194,351 | Namaqualand. | 34, Leadenhall-bldg. | Trans. Gold.....G | 2 1/2 | 3/1 | 1 0 | 1/- Dec. '93 | 1 0 0 | 250,000 | Transvaal | 33, Cornhill |
| New Chimes.....G | 11 1/2 | 11 1/2 | 1 0 | — | 1 0 | 70,000 | Witwatersdrt. | 8, Old Jewry, E.O. | Trans. Land (15/-)G | 2/9 3/3 | 3/8 | 1 0 | — | 0 15 0 | 198,999 | Transvaal | 110, Cannon-street |
| New Consol.....G | 11 1/2 | 11 1/2 | 1 0 | 5% Aug. '92 | 1 0 | 195,000 | Langlaagte | 4, Bishopsgate-st. Wt. | Un. Icy Reef.....G | 16/3 15/9 | 15/9 | 1 0 | — | 1 0 0 | 45,000 | Transvaal | 23, St. Smith's-lane |
| New Cross.....G | 15 1/2 | 15 1/2 | 1 0 | 5% Mar. '94 | 1 0 | 100,000 | Transvaal | 5, Ophthal-building | Un. Langlaagte..G | 12/6 15/- | 15/- | 1 0 | — | 1 0 0 | 100,000 | Witwatersdrt. | 1, Crosby-square |
| New Jagersf...G | 15 1/2 | 15 1/2 | 1 0 | 4/- July '93 | 1 0 | 230,000 | Witwatersdrt. | 2, Draper's-gardens. | Van Ryn.....G | 12/6 15/- | 15/- | 1 0 | — | 1 0 0 | 59,810 | Witwatersdrt. | 1, Crosby-square |
| New Primrose...G | 2 1/2 | 2 1/2 | 1 0 | 10% Mar. '94 | 1 0 | 160,000 | Witwatersdrt. | 1, Crosby-square. | Village Main Reef | 4 4 1/2 | 4 1/2 | 1 0 | — | 1 0 0 | 132,000 | De Kaap | 8, Old Jewry |
| Nigel.....G | 2 1/2 | 2 1/2 | 1 0 | — | 1 0 | 160,000 | Lydenburg | 8, Old Jewry | Virginia.....G | 2/9 3/- | 3/9 | 1 0 | — | 1 0 0 | 46,335 | Transvaal | 26, Budge-row, E.O. |
| Northgate Est. G | 24 1/2 | 24 1/2 | 1 0 | 25/- Nov. '89 | 1 0 | 150,000 | Transvaal | 4, Sun Court, E.O. | Vogelstruis.....G | — | — | 1 0 | — | 1 0 0 | 150,000 | Witwatersdrt. | 34, Leadenhall-bldg. |
| Ophir Consol....G | 1 1/3 1/9 | 1/9 | 1 0 | — | 0 18 6 | 111,857 | E. Coast Africa | 31, Lombard-street. | Wemmer.....G | 4 1/2 | 4 1/2 | 1 0 | 10% Nov. '91 | 1 0 0 | 55,000 | Witwatersdrt. | 19, Bury-street, E.O. |
| Orange F.S.E....G | 4 1/4 | 4 1/4 | 1 0 | — | 1 0 | 284,000 | Orange F. State | 10, Moorgate-street. | Witwatersdrt.....G | 3 3/4 | 2 1/2 | 1 0 | — | 1 0 0 | 250,000 | Witwatersdrt. | 19, Bury-st., E.O. |
| Oriental.....G | 1/9 2/3 | 2/3 | 1 0 | — | 1 0 | 440,450 | De Kaap | Jamaica-bgs. Cornhill | Woluter.....G | 2 1/2 | 2 1/2 | 1 0 | — | 1 0 0 | 120,000 | Witwatersdrt. | Warnford-court |
| Otto's Kopje....G | 17/- 18/- | 18/- | 1 0 | — | 1 0 | 500,000 | Kimberley | 110, Cannon-st., E.O. | Worcester.....G | 2 1/2 | 2 1/2 | 1 0 | — | 1 0 0 | 90,727 | Witwatersdrt. | 8, Old Jewry |
| Paarl Central...G | — | — | 1 0 | — | 1 0 | 138,751 | Transvaal | 79-10, Hol. Vic., E.O. | Zwartland Land... | — | — | 1 0 | — | 0 18 0 | 150,000 | Transvaal | 19, Birch-lane, E.O. |

METAL TRADE STATISTICS.

APRIL, 1894.

COPPER.

(From Messrs. Henry R. Merton and Co.'s Circular for April, 1894.)

| | Apr. 30, 1894. | Apr. 15, 1894. | Mar. 31, 1894. | 30TH APRIL. |
|---|----------------|----------------|----------------|-------------|
| | Tons. | Tons. | Tons. | Tons. |
| STOCKS IN ENGLAND AND FRANCE:— | | | | |
| Liverpool and Swansea, Chili Bars | 31,301 | 31,301 | 30,214 | 28,581 |
| " " Chili Ingots | 556 | 458 | 458 | 493 |
| " " Chili Ores and Regulus (fine) | 92 | 104 | 138 | 393 |
| " " Other stuff (fine) & English Copper | 4,630 | 4,710 | 4,612 | 7,979 |
| London (including landing) | 5,406 | 5,242 | 5,233 | 7,264 |
| Stocks of fine Copper in Havre, Rouen, Bordeaux and Dunkirk | 1,221 | 1,604 | 1,719 | 6,063 |
| ADVISORY FROM CHILI by Mail and Cable, Fine Copper | 4,206 | 42,281 | 42,747 | 48,984 |
| " " Australia, by Mail and Cable, Fine Copper | 800 | 850 | 750 | 800 |
| Price of Chili Bars and G.M.B.'s per ton | £39 17 6 | £40 5 0 | £40 15 0 | £45 12 6 |

COMPARATIVE STATEMENT.

| Month ending | Tons. | Price of G.M.B. | APRIL | | | | Charters from Chili to Europe. | Shipments from Australia to London. | Total Supply. | Total Deliveries. |
|------------------------|--------|-----------------|---------------------|-----------------|---|------------------|--------------------------------|-------------------------------------|---------------|-------------------|
| | | | England and France. | Other European. | England & France from Spain and Portugal (excluding Fines). | Other Countries. | | | | |
| 30th April.....1894 | 46,807 | £39 17 6 | 2,559 | 2,811 | 1,157 | 2,977 | 1,650 | 15,445 | 12,445 | 12,445 |
| 31st March..... | 46,807 | 40 15 0 | 2,548 | 3,096 | 1,184 | 1,699 | 1,500 | 15,475 | 11,342 | 11,342 |
| 28th February | 47,364 | 41 0 0 | 3, 98 | 3,276 | 647 | 764 | 1,950 | 15,385 | 10,173 | 10,173 |
| 31st January..... | 47,152 | 41 5 0 | 4,921 | 2,809 | 1,477 | 890 | 1,350 | 11,547 | 12,000 | 12,000 |
| 31st December.....1893 | 47,295 | 42 15 0 | 3,848 | 4,252 | 1,667 | 852 | 2,700 | 11,839 | 15,371 | 15,371 |
| 30th November | 46,827 | 43 0 0 | 6,146 | 4,388 | 1,332 | 5,684 | 1,400 | 19,400 | 20,813 | 20,813 |
| 31st October..... | 46,840 | 42 6 0 | 7,097 | 6,275 | 959 | 3,082 | 2,200 | 20,853 | 20,517 | 20,517 |
| 30th September | 47,564 | 41 17 6 | 7,940 | 3,971 | 1,255 | 62 | 1,700 | 16,087 | 16,144 | 16,144 |
| 31st August..... | 47,561 | 41 12 6 | 4,272 | 2,188 | 1,535 | 645 | 1,500 | 12,669 | 12,141 | 12,141 |
| 31st July..... | 56,483 | 41 12 6 | 4,236 | 2,412 | 614 | 2,617 | 2,400 | 10,940 | 13,462 | 13,462 |
| 30th June..... | 49,955 | 43 10 0 | 1,914 | 2,310 | 1,958 | 2,548 | 1,850 | 11,130 | 11,122 | 11,122 |
| 31st May..... | 49,951 | 43 8 6 | 3,179 | 997 | 1,791 | 1,771 | 1,750 | 8,928 | 11,126 | 11,126 |
| 30th April.....1893 | 52,094 | 44 10 0 | 52,856 | 39,175 | 15,636 | 23,640 | 21,900 | 6,550 | 150,207 | 16,495 |
| 31st March..... | 55,271 | 45 5 0 | 1,312 | 905 | 799 | 1,884 | 1,600 | 7,469 | 10,636 | 10,636 |
| 28th February | 57,420 | 45 12 6 | 1,821 | 632 | 1,770 | 3,291 | 850 | 8,417 | 10,556 | 10,556 |
| 31st January..... | 58,507 | 45 2 6 | 3,266 | 456 | 1,452 | 4,889 | 1,000 | 9,855 | 10,945 | 10,945 |
| 31st December.....1892 | 55,746 | 46 17 6 | 3,336 | 542 | 2,555 | 3,068 | 2,600 | 300 | 12,228 | 9,391 |
| 30th November | 53,498 | 47 17 6 | 2,812 | 623 | 680 | 1,725 | 1,500 | 700 | 8,060 | 10,640 |
| 31st October..... | 56,076 | 45 12 6 | 751 | 850 | 762 | 2,922 | 1,500 | 7436 | 9,840 | 9,840 |
| 30th September | 59,482 | 44 2 6 | 1,046 | 538 | 1,619 | 2,315 | 1,750 | 400 | 7,667 | 9,323 |
| 31st August..... | 59,718 | 44 7 6 | 2,887 | 324 | 965 | 2,583 | 1,750 | 9,069 | 9,079 | 9,079 |
| 31st July..... | 59,738 | 44 17 6 | 2,907 | 590 | 2,146 | 3,744 | 2,200 | 12,669 | 12,141 | 12,141 |
| 30th June..... | 56,664 | 44 17 6 | 2,909 | 416 | 2,346 | 4,745 | 1,600 | 12,615 | 9, 76 | 9, 76 |
| 31st May..... | 53,965 | 46 7 6 | 2,841 | 664 | 2,288 | 1,215 | 2,150 | 500 | 9,628 | 9,621 |
| 30th April.....1892 | 53,898 | 45 12 6 | 1,960 | 1,284 | 2,422 | 2,968 | 1,501 | 100 | 10,242 | 10,725 |
| 31st March..... | 54,311 | 46 5 0 | 2,260 | 1,667 | 2,012 | 2,013 | 1,750 | 300 | 10,002 | 12,472 |
| 28th February | 56,781 | 44 5 0 | 2,262 | 495 | 1,724 | 1,277 | 2,000 | 300 | 8,058 | 8,739 |
| 31st January..... | 57,462 | 44 12 6 | 2,809 | 893 | 710 | 1,571 | 1,525 | 350 | 7,898 | 6,460 |
| 31st December.....1891 | 56,044 | 46 15 0 | 1,720 | 1,575 | 2,049 | 3,325 | 1,200 | 600 | 10,449 | 12,015 |
| 30th November | 57,600 | 44 12 6 | 5,607 | 812 | 1,417 | 812 | 1,823 | 500 | 10,998 | 10,333 |
| 31st October..... | 59,815 | 44 5 0 | 1,427 | 1,344 | 1,724 | 4,893 | 960 | 330 | 11,746 | 9,899 |
| 30th September | 59,450 | 51 2 6 | 3,045 | 949 | 2,181 | 1,975 | 2,300 | 700 | 11,746 | 11,746 |
| 31st August..... | 59,629 | 52 10 0 | 3,865 | 1,593 | 1,436 | 2,262 | 2,300 | 230 | 11,746 | 9,899 |
| 31st July..... | 57,782 | 52 0 0 | 3,983 | 489 | 1,336 | 1,656 | 1,400 | 700 | 9,564 | 9,107 |
| 30th June..... | 57,325 | 55 5 0 | 2,515 | 1,510 | 3,368 | 3,253 | 1,400 | 510 | 12,5 6 | 13,469 |
| 31st May..... | 53,258 | 55 5 0 | 2,446 | 1,870 | 2,021 | 3,805 | 1,250 | 400 | 11,892 | 13,053 |
| | | | 30,417 | 14,966 | 21,695 | 38,803 | 20,725 | 5,500 | 123,836 | 129,324 |

† Including Chilean and North American for all Europe.

TIN.

(From Messrs. A. Strauss and Co.'s Circular for April, 1894.)

| | 31st March, 1894. | 30th April, 1894. | 30th April, 1893. | 30th April, 1892. |
|--|----------------------|----------------------|----------------------|----------------------|
| | Tons. | Tons. | Tons. | Tons. |
| Straits and Australian spot | 5,487 | 5,204 | 2,835 | 2,227 |
| Litto ditto landing | 1,094 | 1,084 | 619 | 275 |
| Straits, afloat | 4,000 | 3,025 | 2,045 | 1,325 |
| Australian, afloat | 394 | 475 | 507 | 520 |
| | | | | |
| Banca, on Warrants..... | 10,575 | 10,768 | 7,266 | 4,347 |
| Billiton, spot | 1,120 | 443 | 515 | 548 |
| Ditto afloat..... | 872 | 1,149 | 473 | 448 |
| | 1,566 | 1,240 | 958 | 1,368 |
| | | | | |
| Total afloat for United States | 14,493 | 13,600 | 9,299 | 6,711 |
| Estimated stock in America..... | 2,440 | 1,230 | 2,115 | 3,810 |
| | 400 | 450 | 555 | 1,045 |
| | | | | |
| Total | 16,333 | 15,280 | 17,779 | 11,566 |
| | | | | |
| Prices of Straits and Australian | £28 7 6 | £71 7 6 | £93 5 0 | £93 12 0 |
| | | | | |
| Deliveries during the month in London..... | 2,019 | 1,730 | 1,331 | 1,172 |
| Ditto ditto Holland..... | 452 | 1,051 | 822 | 701 |
| | 2,461 | 2,791 | 2,153 | 1,873 |

LEADHILLS.—W. H. Paull, May 1: Brown's Vein: The 160 fathom level south of Jeffrey's shaft is now extended 14 fathoms; let to 11 men at 100s. per fathom. Vein 4 feet wide, containing spar and small quantities of lead ore, now yielding saving work. The 160 fathom level north of Wilson's shaft, let to seven men at 100s. per fathom, is going forward in a large vein rather soft and unproductive; and it is extended 24 fathoms 4 feet from the shaft. The winze below the 145 north of Wilson's shaft is let to six men at 80s. per fathom, and down 11 fathoms. Vein 4 feet wide, producing a little lead ore, but not sufficient to value. No. 1 stope over the 145 north of Jeffrey's shaft is worth 35 cwt. of ore per fathom, and let to two men at 25s. per fathom. No. 2 stope over same level north will yield 25 cwt. of ore per fathom; let to five men at 27s. 6d. per fathom. The stope over the 130 north of Jeffrey's shaft is let to two men at 37s. 6d. per fathom; vein producing 35 cwt. of ore per fathom. The 115 fathom level now driven 120 fathoms 5 feet north of Jeffrey's shaft is let to two men at 90s. per fathom; vein 5 feet wide, composed chiefly of spar and stone, with good patches of lead ore. No. 1 stope over the 115 north of Jeffrey's shaft is let to two men at 32s. 6d. per fathom; vein worth 25 cwt. of ore per fathom. No. 3 stope over the 115 north to five men at 27s. 6d. per fathom; vein producing 30 cwt. of ore per fathom. The 100 fathom level is extended 129 fathoms 5 feet south of Wilson's shaft; vein in forebreast 4 feet wide; contains a nice mixture of spar, but without ore as yet; let to five men at 60s. per fathom. This same level is also being driven south on an eastern portion of the vein which is opening out wider looks promising, and at times producing good stones of ore; let to five men at 60s. per fathom. A drift over the 100 north of winze is let to two men at 50s. per fathom, vein here 4 feet wide worth 60 cwt. of ore per fathom. The stope below the 100 north of Jeffrey's shaft is worked out. The cross cut east at the 100 fathom level south of Wilson's shaft is let to seven men at 120s. per fathom, and good progress is being made. No. 1 stope over the 85 south of Wilson's shaft is let to seven men at 27s. 6d. per fathom, vein worth 120 cwt. of ore per fathom. A stope above the 85 north of No. 1 winze is let to two men at 27s. 6d. per fathom, in a vein yielding 50 cwt. of ore per fathom. No. 2 winze below the 70 fathom level south of Wilson's shaft has reached the depth of the 85 fathom level, and suspended. A cross cut is let to drive east by four men at 90s. per fathom, near the forebreast of the 70 fathom level south of Wilson's shaft. The portion of the vein standing to the east may be expected to be met with in about 34 fathoms of driving. The stope above the 50 south of winze is let to four men at 25s. per fathom, vein worth 70 cwt. of ore per fathom. The stope below the 35 south of flat rod shaft is let to four men at 32s. 6d. per fathom, vein here will yield 70 cwt. per fathom. The stope above same level south of ditto is worked out. Sorrowcole Vein: Gripps add to drive south of George's Roust vein is let to two men at 77s. 6d. per fathom. This end has a very kindly appearance, letting out water freely, and vein contains a strong mixture of quartz and barytes, total distance now driven south 72 fathoms.

FRINCE OF WALES.—S. Roberts, J. Prowse, May 2: There is no change in the cross cut north at the 193, which is now driven 23 fathoms 1 foot, except the priar, referred to last week, has given place to killas. In all other respects the ground and indications are precisely the same as last reported.

WEARDALE LEAD.—Report on Weardale Company's mines for week ending April 28: Grovcrake: Firestone drift east sparry vein poorer in ore and slower to drive, worth 8 cwt. per fathom. Adamson's drift west, sparry vein, worth 14 cwt. per fathom. Cubic fathom stopes worth 12, 12, 12, 12, 14, 12, 12, and 12 cwt. per fathom. All other deadwork stopped. Boltsburn: Stopes above Watts' level in vein and north and south flats worth 24, 24, 18, 18, 34, 32, 20, 30, 16, 24, 18, and 14 cwt. per fathom. Other workings suspended. Greenlows: Nattrass Gill drift, stope worth 16, 16, 20, and 18 cwt. per fathom. Lee's sump, stope worth 18 and 22 cwt. per fathom. Eleven tributary partnerships at work at 25s. per bing. All other work stopped. Sedling: Crosscut north in scar lime from bottom of shaft has been driven 14 fathoms. The flat continues strong, sparry at the bottom of forehand, but cleaner at the top. The lead near the shaft in which we are rising is about 3 feet wide, composed of rider, quartz, and fluor spar, with a little ore, which is being drawn for bone. The 64 fathoms drift east continues worth 20 cwt. per fathom. Stopes in 64 fathoms drift east and west worth 14, 16, 18, and 14 cwt. per fathom. South vein stope worth 12 cwt. per fathom. All other work suspended. Men's wages have been reduced throughout the mines. Ore raised for week, 83 tons; ore dressed for week, 82 tons; ore and slag smelted for the week, 143 tons, producing 76 tons of pig lead.

SOUTH CONDRURROW.—May 2: The 153 crosscut south is suspended for the present and the men set to take out ground for balance hob at the 138 fathom level. The shaftmen have cut ground for plunger connection at the 153 fathom level, have fixed the large cistern, and will be sending down the H piece this evening for the new plunger lift. The flat lode in the 153 west is large and is letting out water freely, and is worth £12 per fathom. The stope in the back of this level is worth £12 per fathom. (Signed) Wm. Rich, Wm. Thomas, Fred. Rich.

COLONIAL, INDIAN, AND FOREIGN MINES.

ANGLO-MEXICAN.—Writing on March 29, with regard to the gold mine at San Jose de Gracia, the manager says: "Main Tunnel: Progress in our work in this tunnel during the past week has been slow, owing to the intervening holidays. Arrangements were, however, made to have a full force of men muster on Monday morning, and in my report on the current week I hope to be able to announce better headway. I have nothing of importance to report to you in connection with our work in this tunnel. The connection with the Jesus Maria workings has not yet been made, but Mr. Wilkins announces that he expects to make it at any time. New Main Tunnel: The condition of the ground we are traversing continues to improve, and consequently very little timbering will be required, thus enabling us to make better progress, which would have been more satisfactory during the week I am reporting on had it not been 'holy week,' when our miners and mine labourers do not care to enter the mine. Air Shaft No. 1 for Main Tunnel: This shaft has advanced 10 feet during the past week making the total depth attained 30 feet. Ore account: Under separate cover I am sending you to-day the assay memorandum of 200 bags of high grade ores. The ore averages about 50 ounces per ton in gold. Writing on April 1 with regard to the Yedras Mine, he says: "In east drift No. 4 from Zapien shaft the face of this drift still carries ore about 3 feet in width, but the grade is not so satisfactory as when I last reported to you on its condition. In east drift No. 3 from Zapien shaft I am pleased to be able to report that this drift continues to present the same favourable condition as when last reported on by me; that is, the face carries ore of a high grade, and measuring in width about 5 feet. Upraise No. 1 from east drift No. 3 from Zapien shaft: This upraise, which will be connected with the underhand stope below the intermediate drift east between this drift and the east drift No. 2 from Zapien shaft, carries ore which will average about 4 feet in width, the grade of which is satisfactory. The connection will probably be made during the present week, and the upraise then carried to the east drift No. 2, by which means ventilation will be improved, and a considerable saving effected in handling the ore from the stopes above and below the drifts referred to."

JAVALL.—The following is the report of the manager, dated March 18. "Our reserve of quartz on the stamp floors at present amounts to about 400 tons, and within the next three months I hope to increase it to 500 tons, to be ready for the coming wet season, when we shall be able to keep up a steady output of ore from the various points of operation to supply 20 stamps. I have during the month treated the tailings in one of the Esperanza arrastras with cyanide of potassium, but the result was not favourable, giving only 13 ounces of amalgam, whilst the other gave 194 ounces. I will continue to give it further trials, and shall be pleased if you can give me more information respecting the treatment of tailings by this method."

Mine report, stope No. 1; During the past month 165 tons of quartz were raised: the lode has undergone no change since last month. I am giving the end in Pims tunnel another trial, and was extended 9 varas, producing 99 tons of ore. The lode in the end has now a much better appearance, and gives better samples of ore. Stope No. 2: From this point 138 tons of quartz were raised: the lode has now a more favourable appearance than last month, the head of the stope being now under that part of Pollock's tunnel which was lost in 1886. I think we might obtain some pay ore mixed with the attle, and when next filling the stope will give it a trial at the stamps. Mill report: During the month five stamps, working 25 days, crushed 320 tons of ore, which yielded 91½ ounces of gold, the returns from the arrastras being 14 ounces; total, 105½ ounces of gold, or an average of 6 dwts, 14 grains per ton.

LA YESCA.—In his report, dated April 11, Captain Michell states: "San Miguel Mine: The men during the past fortnight have been steadily effecting the necessary repairs to the tunnel, and considering the disadvantages they have had to contend with, very fair progress has been made. On the above being accomplished, I shall at once set the end to drive, per contract, to the San Miguel gold bearing vein, and also commence driving on the Wills vein. Tramway: I have bridged over one of the chasms with timber, and the men are now engaged on another break further west. On its completion they will start on the third and last, which crosses the stream, the tramway can then be used for all purposes. Mill house: The masons are proceeding with the erection as fast as possible. The walls are raised nearly to the required height. The dwelling house and storerooms have been thoroughly renovated. All work is progressing satisfactorily. A sample of ore and concentrates from the mines has been submitted to Mr. D. C. Griffiths, F.R.G.S., Assayer to the Bank of England, who reports as follows: Stone: Gold, 1 ounce 4 dwts, 12 grains; silver, 232 ounces per ton of 20 cwt. Concentrates: Gold, 8 ounces 1 dwt.; silver, 1185½ ounces per ton of 20 cwt. Net value of concentrates about £160 per ton. Captain Michell cabled on 19th ult.: "Repairing tunnels as fast as we can. Conditions and prospects most encouraging."

LINEARES.—Mine report dated April 25 Pozo Ancho Mine: The 200 fathom level driving west of Peill's engine shaft, worth 3 tons per fathom, is opening up a good length of stoping ground. The lode in the 155 west of the same shaft is small, consisting chiefly of carbonate of lime, and yielding a little ore. In the 178 west of Warne's cross cut the lode is large and strong, but without ore at present. Good progress is being made in sinking No. 276 winze below the 178 fathom level, and the lode yields occasional stones of ore. Los Quinientos Mine: Taylor's engine shaft: In the 185 south we expect to intersect the lode by the end of the present month. The lode in the 165 east, valued at ½ ton per fathom, is improving in appearance and yielding a little ore. In the 150 east the lode is very open and moderately easy for driving through, worth 1 ton per fathom. The lode in the 130 east continues unproductive.

MEYER AND CHARLTON.—Report for the month of March: Mine: Number of feet driven and risen 415, quartz mined 3900 tons. Mill: Number of days (50 stamps) 27½, number of tons crushed 3600, yield of smelted gold (including 824 ounces from treatment of tailings) 3064 ounces 13 dwts., yield per ton (won by amalgamation) 12 dwts. 10-753 grains. Working Cost: Mining expenses 11s. 10d. per ton, transport 6d. per ton, reduction 3s. 5d. per ton, general charges 3s. 11d. per ton, maintenance 3s. 6d. per ton, mine development redemption 2s. 11d. per ton, total cost £1 6s. 2d. per ton, value of ore £2 6s. per ton, profit 19s. 9d. per ton. Expenditure on Capital Account: Mine development £1145 14s. 11d., machinery, plant, and buildings £1997 1s. 2d.; total, £3142 16s. 1d.

MILES' DAY DAWN UNITED.—The mine manager's report for fortnight ended February 28 states:—Hanging wall shaft deepened 10 feet; total depth, 69 feet. We are now breaking up the footwall to connect with main shaft, which has been cleaned out, and have started to sink same. No. 8 level west extended 9 feet; the hanging wall section for a width of 5 feet is interspersed with quartz veins of inferior quality; the footwall portions show nearly 5 feet of reef of fair quality. A cross course has been met 6 feet from the end of level, and from present appearance, when the footwall is squared forward, will show a large body of stone. The winze under the level is sunk a further 17 feet; total depth, 58 feet. No. 7 level west: Hanging wall is driven 20 feet; ground looks very favourable for reef. In a few feet we shall be in a line with the cross course met in No. 8. The footwall has been extended 10 feet, carrying 3 feet 6 inches of reef. In the stopes the reef varies from 4 feet to 10 feet, all of good quality. No. 7 level east, hanging wall extended 8 feet. The lode here seems more defined and quite clear of the broken country; we have driven through for 50 feet; the reef in the stopes varies from 2 feet to 5 feet. No. 6 level west driven 6 feet; reef varies from 18 inches to 2 feet. In the footwall stope the reef ranges from 18 inches to 5 feet of fair quality. The level going east has been driven 16 feet, carrying 2 feet of reef of fair quality. In stopes on the eastern level, reef averages 3 feet 6 inches of fair quality. No. 5 level west, the level from crosscut going west is driven 15 feet, carrying 18 inches of reef, and should hole on footwall stopes next fortnight. Hanging wall reef over this level is from 18 inches to 5 feet of fair quality. No. 5 level east, reef in stopes varies from 3 feet to 7 feet fair quality. No. 4 level west extended 7 feet, carrying 3 feet of reef. Reef in stopes varies from 18 inches to 7 feet of fair quality. In stopes on eastern side the reef varies from 2 feet to 5 feet of fair quality. Water baled 96 hours. Stone raised 2000 tons.

MOUNT ZEEHAN (Tas.).—Manager reports for week ended March 20: Zigzag section: Main engine shaft No. 6 lode 72 feet level north stope in back of level continued. Ore raised, 13 tons 4 cwt. good quality seconds. There is a very good lode 2 feet wide. Intermediate drive south extended 33 feet. Ore raised, 34 tons 4 cwt. good seconds, from which we picked 2 tons prills. 72 feet level south extended 14 feet; total 45 feet. Ore raised, 6 tons fairly good seconds. 132 feet level north stope south of rise continued. Ore raised, 68 tons 18 cwt. medium seconds. The rise 132 feet level south has been put up 4 feet; total, 12 feet. Ore raised, 8 tons 9 cwt. medium seconds. Lode is 2 feet 6 inches wide and quality improving. Frances lode, Prospect shaft: Pumping plant is completed and works splendidly. Have sunk 2 feet 4 inches; total, 24 feet. Lode is 4 feet 6 inches wide, 2 feet of which is very good ore. A sample of galena taken from here assayed 77½ per cent lead and 179 ounces silver per ton. Concentrator has been run 47 hours and has milled 125 tons seconds for 20 tons 4 cwt. concentrates, containing about 15 tons 3 cwt. lead and 1509 ounces silver.

PAARL CENTRAL.—The following particulars of work done at the mine during the month of March have been received from the secretary at Johannesburg:—The 40 stamps ran 29 days 2 hours 5 minutes, crushing 4393 tons, yielding 1770-25 ounces of gold, average stamp per diem 377 tons, average yield per ton 805 dwts. The cyanide works treated 3122 tons, yielding 551 ounces, average yield per ton 3-52 dwts., total output for month 2321-33 ounces of gold, average yield 11-37 dwts. The mill is running very satisfactorily, and the manager anticipates a considerable increase in both mill and cyanide results, but more especially in the latter.

PAEANG CORPORATION.—March 4: I hereby submit to you progress report of mining operations for the month of February: Pollock's Vertical Shaft: We have been very unfortunate in our operations here during past month. Early in the month there was the Chinese New Year holidays, when the miners in all parts of the mine ceased worked for about a week. The engine was kept running the whole time except for about four hours. We had to stop to do some slight repairs. After starting again, and before the water was lowered sufficiently for the miners to resume sinking, the spring of one of the pistons broke. On taking the piston out we found the spring in three parts, having worn completely through, and as there was no duplicate springs sent out with the engine, I had to fix up a temporary spring with packing. By the time the engine got to work again there was a good many feet of water in the shaft, and the engine had only been working two or three days when the spring of the second piston broke. We fixed it up in the same way as the other, but the packing soon wears out, and has to be replaced every few days. We had both pistons out during the past week, and by the time the packing is renewed, and the engine got to work again, the water is a considerable height in the shaft. Anyway we have

been able to keep the water down and do a little work. We may expect new springs from Singapore by next steamer. The work done in the shaft was 5 feet of sinking, and 30 feet of timbering, and the second partition which divides the shaft into three compartments was put in from the back of No. 2 level up to No. 1. The total depth of shaft is now 198 feet from surface. No. 1 below adit: The drive west was further advanced 33 feet, total from cross cut 181 feet. The lode in the end at present is 6 feet wide, and carrying a width of over 3 feet of ore of good quality. We have been hauling the stuff that was stowed back in the drive; likewise the ore from the 33 feet driven up through the east winze, and has given a return for the month of 10½ per cent black oxide. The winze B in the adit level was restarted during the month, and after sinking an additional 12 feet the contractor gave it up on account of the water being too heavy. The total depth is now 30 feet 6 inches. This is a winze that was started between two and three years ago. There was first class ore where it was started, but for what reason I cannot tell it was sunk vertically; consequently they sunk through the good ore and into the country rock on the footwall side. In the few feet that have lately been sunk it was carried down on the underlie towards the hanging wall, but has not yet reached the payable ore. The drive from Campbells has been further advanced a distance of 23 feet, total length 600 feet. The lode in the end is over 3 feet wide, and the ore payable. The leading stope following the drive along is also producing ore of fair quality. The drive back westward from the bottom of C winze has been further advanced 24 feet, total 50 feet. The payable ore in the end is now only a little over 1 foot wide, and I think this drive will soon reach the slide mentioned in last report. We have now started stoping over the back of above drive from which the ore is payable. The stope on the western end of shoot is still producing ore of good quality. It gave a return for the month of 9 per cent. of black oxide. We find the payable ore trending westward as we follow it upward. This level, from both west and east ends of the shoot of ore has opened up first class and looks extremely well under foot for continuing in depth, and when the east and west drives are connected and the leading stope carried along we will be able to increase the output of ore very considerably, so much so that I think it will soon be necessary to erect more stamps, and when the shaft is sunk to the No. 3 level about 18 months driving will open up both Nos. 2 and 3 ready for stoping along the whole length of the payable shoot; when with a good winding plant there will be no trouble to keep at least 40 head of stamps running night and day, after which I would recommend the sinking of the shaft be resumed with rock drills. Jeram Batang: The drive west No. 2 above adit was further advanced 20 feet, total from crosscut 393 feet. The lode is still 3 feet wide, but the payable is now only 1 foot wide. (Signed) Wm. Straughan.

PALMAREJO.—Letter received from the manager under date April 27: In compliance with your letter of November, 1893, No. 129, I have submitted to you under their respective dates the several plans and sectional drawings of all the different alterations and improvements to which you call my attention, and in doing so I have carefully considered each and every point connected therewith; and, in addition to the letters that have already been forwarded accompanying them, and the recommendation therein contained, I now beg to say that it is my opinion that with these proposed improvements being carried out, it will place our works here in a position to be able to increase the output of the property to that extent that not only to be able to meet the payment of the debentures and preference shareholders, but that the original shareholders will receive a reasonable dividend. I can see no better course for the company to pursue. It is a well-considered proposition, and I strongly recommend the carrying out of the same at as early a date as possible. I have no hesitation in saying that it is my opinion that the company's mines can furnish all the 23 ounces ore, and the basis upon which I based my estimate, that can be worked by a 100 stamp mill for many years to come. I shall anxiously wait the decision and the direction of the board of directors. (Signed) Frank Drake.

UNITED GOLD FIELDS OF MANICA.—Return of work done at the Rezende Mine for the two weeks ending March 10: No. 1 adit distance driven 14 feet 6 inches, total length 490 feet. The rock still hard and tough. No. 2 adit distance driven 14 feet 6 inches, total length 558 feet. Occasional small veins of quartz occur, some showing a little gold on panning; the air has been bad several mornings.

GRAVEL GOLD.—W. St. D. Griffith, March 20: Run No. 7: During the last month we have been repairing the breaks on the ditches, removing the Rica syphon, unjointing all the mine pipe, and re-laying the 26 inch pipe from the new bulkhead to the back of the Rica bank. We shall wash through this rim in order to lay the 26 inch pipe into the mine. We have laid down 150 feet of new sluice to catch the gold from this opening, and I have now got the monitor fixed, and am washing away the debris at the foot of the bank.

OSCAR.—The following report has been received from the mine, dated Hagesund, April 30:—Hodgkinson's Lode: Since last writing you I see no alteration in the workings to call for special remarks. The quartz in 500 north is about 15 inches in width, and is well mineralised. In the 200 we have a run of quartz about 10 inches wide carrying galena and a little visible gold. These two levels are important points in the mine, and should be driven with utmost speed. Unfortunately, owing to want of miners, we are unable to push work as fast as wished. On Saturday afternoon a stone showing gold (am sending same to office) was broken from a small quartz vein to south-west of Williams's lode. The vein is only a few inches in width at surface, but so was Hodgkinson's lode. I have put a miner to blast there to-day, after which I will take samples, assay, and send you results.

SPITZKOP FARM.—Report for week ending March 31: 10-stamper mill worked 60 hours, crushed 85 tons ore; yield, 210 ounces amalgam. Reef Hill: We are now getting the ore from the creek below the mill. Hydraulic: 2 monitors worked 5½ days each during the week. The wash in the face is about the same as last week.

SALISBURY GOLD.—The manager reports on the workings for the month of February as follows:—Total number of feet driven, sunk, and risen, 309 feet 6 inches, made up as under: Main incline shaft, advanced 13 feet; total, 586 feet. South reef, fifth level, drive east, advanced 6 feet 6 inches; total, 249 feet. South reef, fifth level, winze 1 east, advanced 10 feet 6 inches; total, 46 feet 6 inches. South reef, fifth level, drive west, advanced 8 feet; total, 257 feet. South reef, fifth level, winze 1 west, advanced 10 feet; total, 65 feet. South reef, sixth level, drive east, advanced 34 feet; total, 180 feet. South reef, sixth level, rise 1 east, advanced 37 feet 6 inches; total, 69 feet 6 inches. South reef, sixth level, crosscut south, advanced 3 feet; total 3 feet. South reef, sixth level, rise 1 west, advanced 17 feet 6 inches; total 48 feet 6 inches. South reef, sixth level, winze 1 west, advanced 11 feet; total 29 feet. Main reef leader, fifth level, winze 1 east, advanced 12 feet; total 20 feet. Main reef leader, fifth level, crosscut north, advanced 61 feet; total 226 feet. Main reef leader, sixth level, drive east, advanced 46 feet 6 inches; total 79 feet. Main reef leader, sixth level, drive west, advanced 29 feet; total 55 feet. Main reef, fifth level, drive east, advanced 5 feet; total 5 feet. Main reef, fifth level, drive west, advanced 5 feet; total 5 feet. Milling: The mill ran 27 days; ore milled 1916 tons. Gold extracted from the battery 996 ounces; gold extracted from the cyanide works 303 ounces 3 dwts.; total 1299 ounces 3 dwts.; value £4476 3s. 2d. Total working expenses per ton, including redemption £1 12s. 9½d.; value of yield per ton £1 17s. 8d.

AUSTRALASIAN.—Fortnightly report of Mr. John James, dated March 15: In the underground stope going north on the Orient reef the crushing stuff keeps about the same and shows fair gold. In the stope over the level going south there is about 12 inches of crushing stuff showing a little gold. In the stope over the 690 foot level on the same reef there is about 15 inches of crushing stuff showing a little gold. Everything about the mine and winding engine is in fair working order. There are 30 men employed.

ALAMILLOS.—Mine report dated April 25: In the 160 fathom level driving west of Taylor's engine shaft the lode has a good appearance, and is producing stones of lead. The lode in the 100 west of Judd's engine shaft has fallen off in value, and is now valued at 1 ton per fathom. The lode in the 100 east of the same shaft is small and poor. Isidoro's winze sinking below the 70 fathom level, the lode produces a little lead.

BRILLIANT BLOCK.—The mine manager's report for the fortnight ending March 7 states:—Underlie Shaft: Contractors started sinking on February 26, and have sunk 6 feet up to date; the reef in the sink is 6 feet thick on west side of shaft and 3 feet on east side of medium quality. No. 5 level west extended 16 feet by contract; total from shaft, 62 feet; the reef in the face is split up at present, but in the leading stope over the level we have 5 feet of reef, of fair quality. No. 5 level east extended 18 feet; total from shaft, 64 feet. In the leading stope over this level the reef is 5 feet thick, of fair quality; the reef in the level is 2 feet thick, of fair quality. No. 4 level west extended 15 feet by contract; total from shaft, 391 feet; reef in face, 1 foot thick, of low quality. In the stope over this level the reef is 2 feet thick, of medium quality. No. 1 winze, which is being sunk from this level, has been deepened 28 feet by contract; total depth from level, 56 feet. We are sinking this in a soft formation, with a little quartz in it.—No. 4 level east: Footwall drive on this level extended 24 feet by contract; total from shaft, 315 feet; reef in the face is 5 feet thick of fair quality. The leading stope over this level carries a reef 1 foot thick of fair quality. The hanging wall drive being driven from this level extended 23 feet; total from starting point 124 feet, carrying a reef 1 foot thick of good stone. We are stopping over this drive on about 2 feet of stone.—No. 3 level east: We are stopping over this level on 20 inches of fair quality stone.—No. 1 level east: We are stopping in one stope at this level on 3 feet 6 inches of stone of low quality. Stone hauled during the fortnight, about 600 tons; stone crushed, 548 tons for 795 ounces 4 dwts. of smelted gold.

CALIFORNIA MILLING AND MINING.—The directors have received the following from the manager in Colorado: Return for month of March: Mill: Custom ore treated 1961½; California ore 32 tons; total 1993½ tons for the month. Average of 65 stamps dropping until 21st of March, since then only 50 stamps. We have pulled down the first section of 25 stamps, and are now rebuilding the same in the best possible manner. I hope to have this section finished and at work before the end of next month, when we shall commence on the rest of the mill.—Mine: We have 18 tributaries at work in various parts of the mine who are producing ore at a small profit to the company. The crosscut south at the 300 feet level is now in 26 feet, the rock being very hard. This important work should cut both the new vein and the Pov. Adams within the next 30 feet, and open up valuable ground for stoping. On the last day of March we began hoisting water in the California shaft, it having risen almost to our 1000 feet level. We are now hoisting one shift daily, which easily holds the water. Total receipts for month, \$4858 88; total expenses (exclusive of \$1500 paid on account of rebuilding of mill), \$3569 22. Profit for the month, \$1289 66.

CHAMPION REEF.—Fortnightly report of Captain James Rowe, superintendent, dated April 9: Dalyell's shaft has been sunk 13 feet 6 inches, total depth 680 feet 9 inches. Lode 6 inches wide, assaying 3 ounces 16 dwts. 13 grains of gold per ton. 620 feet level north has been driven 29 feet, total length from winze 45 feet. This end is in the dyke and suspended.—Garland's Shaft: We have been engaged cutting plat at the 630 feet level, and have now resumed sinking the shaft in the dyke. The 630 cross cut west has been driven 3 feet 9 inches, total length 46 feet. This has passed through the lode, which was found to be 7 feet wide, assaying 1 ounce 15 dwts. of gold per ton. Before driving north and south on this we have to cut plat and sink the shaft below the level; as soon as sufficient depth is attained we shall start driving north and south of crosscut on the lode. The 530 feet level north of west cross cut has been driven 32 feet 3 inches, total length 350 feet 9 inches. Lode pinched a little, is now 1 foot 6 inches wide, assaying 1 ounce 1 dwts. 4 grains of gold per ton. No. 2 rise in back of level has been put up 8 feet, total height 46 feet. This is communicated with No. 2 winze below 440 north. No. 3 new rise in back of level 100 feet north of No. 2 rise has been put up 13 feet 3 inches. Lode 5 feet wide, assaying 1 ounce 8 dwts. 8 grains of gold per ton. Rise in back of 530 south of cross cut has been put up 23 feet 6 inches, total height 78 feet. Lode 2½ feet wide, assaying 17 dwts. 15 grains of gold per ton. Rise in back of 440 south of west cross cut risen 13 feet 3 inches, total height 39 feet 3 inches. Lode 2 feet wide, assaying 18 dwts. 20 grains of gold per ton. 440 feet level north of west crosscut has been driven 21 feet, total length 340 feet 6 inches. Lode 4 feet wide, assaying 1 ounce 12 dwts. 6 grains of gold per ton. No. 2 winze below level sunk 4 feet 9 inches, total depth 39 feet 9 inches. This is communicated with No. 2 rise in back of 530 north of west crosscut. 340 feet level south of west crosscut north of Garland's has been driven 33 feet 9 inches, total length 59 feet 3 inches. Lode 4 feet wide, assaying 16 dwts. 8 grains of gold per ton. No. 2 winze in bottom of 340 north of west crosscut sunk 9 feet 6 inches, total depth 47 feet. Lode 2½ feet wide, assaying 2 ounces 10 dwts. 15 grains of gold per ton. The 240 feet level north of west crosscut has been driven 17 feet, total length 397 feet 6 inches. This having passed through the shoot of ore is suspended. Ribblesdale's shaft has been sunk 10 feet 6 inches, total depth 491 feet 3 inches. Lode pinched very small, and without value. The 440 feet level south has been driven 11 feet 9 inches, total length 226 feet 2 inches. Lode very small and without value. The 340 south has been driven 21 feet 9 inches, total length 567 feet 2 inches. Lode pinched, is now 9 inches wide, assaying 16 dwts. 8 grains of gold per ton. New winze below level (60 feet behind end) sunk 11 feet. Lode 1 foot 9 inches wide, assaying 1 ounce 19 dwts. 10 grains of gold per ton. The 440 feet level north of winze sunk in bottom of 340 north on south part of fold has been driven 24 feet. Lode 6 feet wide, assaying 2 ounces 17 dwts. 15 grains of gold per ton. No. 1 rise in back of 240 south has been put up 5 feet, total height from 200 level 16 feet. Lode 4 feet wide, assaying 1 ounce 15 dwts. 5 grains of gold per ton. 200 feet level north of No. 1 rise has been driven 12 feet 9 inches, total length 73 feet 9 inches. This having passed through the shoot of ore is suspended. Winze in bottom of 240 south has been sunk 7 feet 6 inches, total depth 94 feet. Lode 1 foot 6 inches wide, assaying 2 ounces 2 dwts. 6 grains of gold per ton. 200 feet level south of No. 1 rise in back of 240 north has been driven 22 feet, total length 178 feet. Lode 2 feet wide, assaying 1 ounce 18 dwts. 4 grains of gold per ton.—Carmichael's Shaft: The 315 feet level north has been driven 22 feet 9 inches, total length 555 feet 3 inches. Lode 1 foot wide, assaying 1 ounce 11 dwts. 22 grains of gold per ton. Rise in back of 315 south of crosscut west of shaft to communicate with vertical shaft has been put up 15 feet 6 inches, total height 85 feet 6 inches.—Rowe's Shaft: The 315 feet level south of shaft has been driven 21 feet 10 inches, total length 284 feet 4 inches. Lode 2 feet 3 inches wide, assaying 3 ounces 12 dwts. 19 grains of gold per ton.—Stopes.—Dalyell's Shaft: No. 1 new stope in back of 630 north of shaft cut 8 fathoms 5 feet. Lode 1 foot 6 inches wide, assaying 1 ounce 4 dwts. 16 grains of gold per ton. No. 2 new stope in back of level north of rise cut 1 fathom 1 foot 9 inches. Lode 5 feet wide, assaying 1 ounce of gold per ton. Stope in back of 620 south of 530 south winze cut 11 fathoms 6 inches. This is suspended for a time. Stope in back of 530 south, south of rise cut 9 fathoms 2 feet. Lode 3 feet wide, assaying 1 ounce 16 dwts. 19 grains of gold per ton. Stope in back of 530 north south of rise cut 7 fathoms 1 foot 6 inches. Lode 2 feet wide assaying 2 ounces 17 dwts. 17 grains of gold per ton. Stope in bottom of 390 south out 3 fathoms 1 foot 6 inches. This is suspended. Stope in bottom of level north of 440 south rise cut 5 fathoms 5 feet 6 inches. Lode 1 foot 9 inches wide assaying 1 ounce 15 dwts. 4 grains of gold per

ton. Garland's Shaft: Stope in back of 530 north, north of No. 1 rise, cut 5 fathoms 3 feet 7 inches. Lode 2½ feet wide assaying 1 ounce 10 dwts. 13 grains of gold per ton. Stope south of rise cut 4 fathoms 3 feet 9 inches. Lode 2½ feet wide assaying 2 ounces of gold per ton. Stope in back of 440 north, north of rise cut 1 fathom 1 foot 3 inches. This is suspended for a time. Stope south of rise cut 4 fathoms 1 foot 9 inches. Lode 4 feet wide assaying 2 ounces 2 dwts. 10 grains of gold per ton. Stope in back of 240 north, south of No. 2 rise cut 1 fathom 3 feet. Lode 2 feet wide assaying 2 ounces of gold per ton. Stope in back of 240 north, south of No. 1 rise cut 1 fathom. Lode 2 feet wide assaying 1 ounce 6 dwts of gold per ton. Stope in back of level south of top of No. 2 north rise, cut 4 fathoms 3 inches. Lode 3 feet wide assaying 1 ounce 18 dwts. 20 grains of gold per ton. Stope in back of 240 south of crosscut cut 1 fathom 4 feet 9 inches. This is suspended. Ribblesdale's Shaft: Stope in back of 200 north of No. 2 rise in back of 240 south out 13 fathoms 1 foot 6 inches. Lode 6 feet wide assaying 1 ounce 8 dwts. 18 grains of gold per ton. Stope south of No. 1 rise in back of 240 south, cut 4 fathoms 3 feet. Lode 3 feet wide assaying 18 dwts. 18 grains of gold per ton. Stope in bottom of 200 north of 240 south rise cut 7 fathoms 1 foot. Lode 1 foot 6 inches wide assaying 1 ounce 9 dwts. 14 grains of gold per ton. Stope in bottom of 200, south of 240 north rise cut 13 fathoms 2 feet 3 inches. Lode 2 feet wide, assaying 1 ounce 18 dwts. of gold per ton. Stope in bottom of 200 north of 240 north rise cut 3 fathoms 3 feet 6 inches. This is suspended. Stope in bottom of 240 north, north of winze, cut 14 fathoms. This is suspended. Stope in bottom of level south of winze cut 3 fathoms 3 feet. Lode 1 foot 6 inches wide, assaying 2 ounces 17 dwts. 14 grains of gold per ton. New stope in back of 340 north on fold cut 12 fathoms 1 foot. Lode 8 feet wide, assaying 1 ounce 16 dwts. 13 grains of gold per ton. The above stoping is for March month.—Returns: During March month 2085 tons of quartz were stamped, which produced 3048 ounces of gold, an average yield of 1 ounce 9 dwts. 5½ grains per ton. 1000 tons tailings were treated which yielded 219 ounces of gold, a total return of 3267 ounces of gold.

COROMANDEL.—Superintendent's report for fortnight ending 7th April: Coromandel Shaft: 420 feet level north driven during the fortnight 15 feet 10 inches, making its total length 88 feet. The lode, though still very small, is irregular and well defined, and we look for speedy improvement in this end. 420 feet level south has been driven since last report 13 feet, total 50 feet from crosscut. In the last few days the quartz has opened out to 1 foot 6 inches wide, and we appear to be entering the north end of another shoot. This quartz is at present worth 6 dwts. per ton, but it has a good appearance, and we hope it will improve in value going southward. 320 feet level north has been advanced 15 feet, and is now 331 feet 6 inches from crosscut. The lode has pinched to 15 inches wide during the past week, but there are indications of the walls reopening. Assay value of quartz 12 dwts. per ton. Prospect shaft sunk 7 feet, total 483 feet 10 inches. This gang has been engaged a great part of the time in securing the hanging wall which had become unsafe. 440 crosscut north east driven 20 feet, the end being still in dyke. The total length of this drive is now 128 feet 2 inches. 500 feet level south of winze driven 15 feet 7 inches, total 57 feet 7 inches. This end has now got into settled ground on the south side of the crosscourse. The branch first intersected has become very small, and we have now started crosscuts east and west with the hope of finding something of greater value.

DE LAMAR.—Captain J. W. Plummer reports as follows for March: Mining: Ore breaking department: Wilson vein above the 3rd level: The vein is 3 feet 6 inches wide, assaying in gold \$22 75 and \$1 34 in silver, equal to \$24 9 per ton. 77 feet above the 5th level west, the vein is 3 feet wide, assaying \$16 87 in gold and \$1 in silver, equal to \$17 87 per ton. I would remind you that this block of ground belongs to what is known as the second ore chute on the 77 feet vein. 77 feet vein above the 6th level, the vein is of its usual width; we are, however, carrying only an average width of 6 feet, which assays in gold \$7 90 and in silver \$21 20, equal to \$29 10 per ton. 77 feet vein above the 7th level, the vein is 9 feet wide, assaying \$17 55 in gold and \$9 25 in silver, equal to \$26 80 per ton. 77 feet vein above the 8th level, the vein is 5 feet wide, assaying \$3 50 in gold and \$34 50 in silver, equal to \$38 per ton. 77 feet vein above the 9th level, the vein is 5 feet wide, assaying \$24 in gold and \$5 50 in silver, equal to \$29 50 per ton. No. 5 vein above the 6th level, the vein is 7 feet wide, assaying \$23 in gold and \$3 55 in silver, equal to \$26 55 per ton. No. 5 vein above the 8th level, the vein is 8 feet wide, assaying \$29 50 in gold and \$1 85 in silver, equal to \$31 35 per ton. No. 5 vein above the ninth level is 4 feet wide, assaying \$18 50 in gold and \$4 65 in silver, equal to \$23 15 per ton. No. 6 vein above the eighth level is 3 feet wide, assaying \$41 75 in gold and \$10 83 in silver, equal to \$52 58 per ton. No. 7 vein above the seventh level is 6 feet wide, assaying \$19 in gold and \$1 50 in silver, equal to \$20 50 per ton. No. 7 vein above eighth level is 3 feet wide, assaying \$24 in gold and \$3 in silver, equal to \$27 per ton. No. 9 vein above the seventh level is 7 feet wide, assaying \$22 85 in gold and \$4 in silver, equal to \$26 85 per ton. No. 9 vein above the eighth level is 8 feet wide, assaying \$23 30 in gold and \$6 in silver, equal to \$29 30 per ton. No. 9 vein above the ninth level is 3 feet wide, assaying \$21 30 in gold and \$4 25 in silver, equal to \$25 55 per ton.—Prospecting Department: The full length of 77 feet vein, eighth level west, is 37 feet 9 inches; it has approached close to the main eighth level east, and can be dispensed with; its assay value at the time of its suspension was gold \$16 and silver \$5, equal to \$21 per ton. The 77 feet vein raised above the ninth level is being carried up on the hanging wall side of the vein; its full height is 47 feet; its assay value is \$16 50 in gold and \$19 50 in silver, equal to \$36 per ton; the course of the raise is now changed, and we are going towards the footwall of the vein; the ore shows rich quartz mixed with porphyry.—77 feet vein 9th level east of crosscut: This has already been reported as a prospecting drift on the 77 feet vein; its full length to date is 89 feet 6 inches; the vein for about the width of the drift assays \$19 in gold and \$5 50 in silver, equal to \$24 50 per ton, with evidence of improvement. No. 5 vein 6th level, hanging wall section, east drift advanced for the month 35 feet 9 inches, total length 82 feet. The vein is 5 feet wide, assaying \$23 in gold and \$1 in silver, equal to \$24 per ton. No. 5 vein, winze below 6th level, total depth of winze 47 feet 6 inches. The vein measures 4 feet wide, assaying \$26 50 in gold and \$1 in silver, equal to \$27 50 per ton. No. 7 vein, 9th level west, total length 81 feet 9 inches, it has become very narrow, assaying \$30 in gold and \$4 50 in silver per ton, equal to \$34 50 per ton. No. 8 vein, 8th level east, this level was commenced from the east side of the Wahl Tunnel and towards the clay dyke; its length is 30 feet. It is narrow for all the distance, but of good grade, viz., assaying \$32 in gold and \$22 silver, equal to \$54 per ton. It is now suspended. No. 8 vein, eighth level west raise, the total height of this raise is 49 feet; the width of the vein is 3 feet, assaying \$33 10 in gold and \$2 in silver, equal to \$35 10 per ton. No. 9 vein seventh level west advanced for the month 35 feet 9 inches; total length 157 feet; the vein is 9 feet wide, assaying \$28 64 in gold and \$1 in silver, equal to \$29 64 per ton; the vein at the present writing is narrowing somewhat. No. 9 vein, eighth level west advanced for the month 20 feet; total length west of Wahl tunnel 239 feet; the vein measures 2 feet in width, assaying \$23 35 in gold and \$3 in silver, equal to \$26 35 per ton; there is a decided improvement both in width of vein and quality of ore. No. 9 vein ninth level west advanced for the month 27 feet 3 inches; total length 184 feet 3 inches; its width is 3 feet 6 inches, assaying \$24 60 in gold and \$6 in silver, equal to \$30 60 per ton. Total length of the No. 10 level crosscut 147 feet. This level is being driven north and south from the bottom of the incline shaft. The No. 5 vein has been entered by the level; it measures 4 feet in width, assaying \$24 80 in gold and \$2 27 in silver, equal to \$27 07 per ton. The No. 6 vein has been entered also; at the point of intersection it was of rather low grade; no developments have been made on these veins other than passing through them with the crosscut level. The south end of the crosscut is being pushed on to intersect the eighth and ninth veins and branches thereof.—Shipping ore department: The level on the clay dyke on the seventh

east has to all appearances entered the main section of ground; that is (allowing for the sinuosities of the clay dyke) a continuation of the productive blocks found at the third, fourth, and fifth levels. The face of the level (seventh east) produces more or less ore, and of good grade. We have extended a raise above this level and towards No. 5 level for a distance of 118 feet. We are, therefore, prepared to further develop this section at any time by intermediate drifts or by stoping. The other sources of shipping ore are the 77 feet vein on seventh level, 77 feet vein on eighth level, seventh vein on seventh level, fifth vein on eighth level, and various stopes above the fifth level east.

FORTUNA.—Mine report dated April 25: Canada Inco Mine: In the 150 fathom level driving west of O'Shea's engine shaft, the lode contains some spots of ore. The 110 west of San Pedro's shaft does not contain sufficient ore to value.—Los Salidos Mine: The 200 east of Taylor's engine shaft continues to open out productive ore ground, worth 2 tons per fathom. The lode in the 105 east of Palgrave's shaft looks kindly, and is more compact, valued at ½ ton per fathom. Good progress is being made in Cordova's winze below the 188 fathom level. The lode is unchanged and valued at 2 tons per fathom.

GOLD FIELDS OF MYSORE.—Mine report for fortnight ending April 9: Oriental lode, south shaft: The 470 feet level north has been driven 3 feet 9 inches, total length 76 feet 3 inches. Lode 1½ feet wide, assaying 1 ounce 15 dwts. 4 grains of gold per ton. 470 feet level south has been driven 4 feet, total length 76 feet. Lode 1 foot 6 inches wide, assaying 1 ounce 3 dwts. 14 grains of gold per ton. The 380 feet level north has been driven 1 foot 9 inches, total length 179 feet 10 inches. Lode pinched to 6 inches wide, assaying 1 ounce of gold per ton. 380 feet level south has been driven 5 feet, total length 164 feet 3 inches. Lode ¾ feet wide, assaying 1 ounce, 2 dwts. 12 grains of gold per ton. The 280 crosscut east of shaft has been driven 4 feet, total length 218 feet 9 inches. There is no change to note as yet in the strata.—Prospecting work: Captain Williams is sending a report by this mail.

GOLD FIELDS OF MYSORE.—Fortnightly report on prospecting operations, dated April 11: West Balaghat Block: No. 1 shaft south drive at the bottom of this shaft has been driven 10 feet 4 inches, total distance from shaft 43 feet. Lode in the end 2 feet wide, assaying 1 ounce 1 dwts. 5 grains of gold per ton. North drive has been driven 6 feet 8 inches, total distance from shaft 27 feet 2 inches. Lode in the end 2 feet wide, assaying 15 dwts. 6 grains of gold per ton. No. 2 shaft has been sunk 4 feet 8 inches, total depth 119 feet 2 inches. Lode in the bottom 1 foot 10 inches wide, assaying 12 dwts. 9 grains of gold per ton. South drive 100 feet from surface has been driven 6 feet 3 inches, total distance from shaft 62 feet 6 inches. Lode in the end 1 foot 4 inches wide, assaying 11 dwts. of gold per ton. North drive 100 feet from surface has been driven 6 feet, total distance from shaft 53 feet 4 inches. Lode in the end 2 feet 3 inches wide, assaying 9 dwts. 10 grains of gold per ton. No. 3 shaft, south drive 117 feet from surface has been driven 14 feet 5 inches, total distance from shaft 36 feet. Lode in the end 1 foot 6 inches wide, assaying 7 dwts. of gold per ton. North drive 117 feet from surface has been driven 11 feet 2 inches, total distance 17 feet. Lode in the end 1 foot 6 inches wide, assaying 11 dwts. 18 grains of gold per ton. No. 4 shaft has been sunk 9 feet, total depth 111 feet. Lode in the bottom 1 foot wide, assaying 8 dwts. 8 grains of gold per ton.—Road Block, shaft in cut No. 2 north, No. 2 on eastern lode: At the bottom of this shaft, 45 feet from surface, we have driven a crosscut west 19 feet. 12 feet from shaft we met with a stringer of quartz 10 inches wide, assaying 1 ounce 9 dwts. 9 grains of gold per ton. We have suspended operations here for a time.—200 feet north of the above: We have made a cutting 20 feet long 3 feet wide 5 feet deep. In this we met with the lode, and have sunk on it 25 feet. Lode in the bottom 1 foot wide, assaying 15 dwts. of gold per ton.

GOLDEN FEATHER CHANNEL.—Extracts from letter from Col. Frank McLaughlin, dated Orville, April 7:—I am pleased to report that the canal, ditch, telephone line, roads, &c., passed through the winter comparatively unharmed. There has been nothing of importance to communicate, no work having been carried on beyond the regular patrol of the ditch, telephone line, and camps, until March 25, when work was commenced on very necessary repairs to the Parrish pipe and certain sections of the ditch, which have been cleaned out and strengthened. All this labour will be finished by the 15th. The early commencement and completion of this work is a very convincing proof of the mildness of the season. The river keeps steadily up, and but little snow is reported in the sections of the mountains which drain into the Feather. In short, the indications for an early season could not be better, and I believe that this will be the most favourable one we have had for many years, certainly since the Golden Gate and Feather Companies have been at work in the river, and my belief is shared in by all hands. We are fully prepared, and from the day the river is turned into the canal, work shall be rushed day and night.

KEMPINKOTE.—Superintendent's report for fortnight ending April 10: Garland's shaft has been sunk 12 feet, making a total depth of 159 feet 9 inches. Henty's shaft has been sunk 6 feet, making a total depth of 180. There is no change to report; the rock is still very hard. 173 feet level has been advanced 10 feet 6 inches, making a total length from the shaft of 12 feet 6 inches. We are now driving in a westerly direction, and seem to be coming to the lode. The ground has changed, and shows patches and strings of quartz.—Prospecting: No. 6 pit has been sunk 10 feet, making a total of 41 feet. We have now started to crosscut to the east, and have driven 12 feet 6 inches in this direction.

LA PLATA.—The following news has been received from Mr. Nines, the agent of the Gold Fields of Mosambique (Limited) by the last mail:—Alluvial Claims: I intend to start to-morrow for Inhacmarara to peg out as many alluvial claims as I can. I don't suppose there will be more than 10 additional claims available, as it is the richest alluvial of Inhacmarara, and also richer than anything in the Massi Kesse district. I am also testing the alluvial in the Manene Valley. Other companies are pegging away here. I expect a big rush, and must get all the ground I want before it begins.—Quartz Claims: The preparatory work on the Bettencourt claims continues. A block of valuable claims has been pegged out by another syndicate, on the eastern extension of the Lion reef, the property of the Lion (Mosambique) Company, on which numerous old workings exist. At the rate pegging is going on all the ground in the country will soon be pegged out. There must be already 1000 claims taken up in the Massi Kesse and Inhacmarara districts by prospectors, to say nothing of the properties owned by the established companies.—New Township: I have paid the deposit for two stands in the new township of Massi Kesse. I did this to get the stands in the best possible position. The majority of the stands surveyed have been applied for. It is anticipated that the township will have to be enlarged before the surveyor leaves the district.

MOUNT LYELL.—The London committee has received the following report from the Melbourne board for the week ended March 14:—Engine Shaft, 100 feet Level: The western cross cut has been advanced 3 feet, total 49 feet; the hard rock we have been passing through is giving place to lode material, consisting of barytophyrites and galena. Engine shaft, 50 feet level, the south drive has been driven 12 feet, total 53 feet; the country has been harder, a mixture of schist and iron requiring shooting.—Stopes: Stoping over the north level is being carried on as usual. The orebody is narrowing as it is followed up, but is still of good quality. A cross cut west has been driven 11 feet from the end of the north level; in this there is about 12 feet of good ore showing across the face.—No. 2 Shaft: The contractors have sunk 6 feet; total 96 feet. No change to report.—No. 5 Tunnel: The contractors have driven 33 feet; total 378 feet. There is no particular change to report; the face is still in good driving ground.—New Road: The contractor has completed the road, and handed it over in good order.—Ore Raised: 184 bags of ore, weighing 11 tons 5 dwts. 0 gr. 8 lbs., and containing 11,435 ounces of silver, or an average of 1016 ounces per ton, have been raised and sampled.—Ore Dispatched: No ore has been dispatched from the mine this week, the drays being engaged carting the balance of the ore taken previously by the packers, and stacked in the road near the Queen River. This will take them several days yet to deliver at Strahan.

MOSMAN.—The mine manager's report for the fortnight ended March 2 is as follows: North Australian Mine: South Byerley level crosscut further extended 10 feet, total distance from level 35 feet; the rock is very hard for working. Byerley level winze deepened an additional 13 feet, total depth 110 feet; the reef has pinched since last report, and the formation is hard.—Stopes: Whistler's stopes just now carry no stone, others show a reef from 4 inches to 2 feet thick. The quality I judge at from 35 dwts. to 2 ounces per ton.—Stone raised: 55 tons have been raised since last report; total in paddock 255 tons.—Wyndham Mine: No. 13 level south further extended 30 feet, total from shaft 85 feet. During the past week the reef has pinched, but the country looks favourable for its making again; water is still coming from face of drive. No. 13 level north extended 24 feet, total from shaft 86 feet; so far, the reef is small and of poor quality.—No. 12 level south winze: A winze has been started in this level on contract, 35 feet having been sunk during fortnight; there is no stone at present. No. 8 level south has been driven a further 25 feet, total distance from cross cut 88 feet; the reef cut out a few days ago, but is, I think, making again, as there is stone 4 inches thick in the face after last shot. No. 8 level north driven 26 feet, total from the shaft 357 feet; the formation is not favourable for stone.—Stopes: Over 12 level north the reef varies from 6 inches to 2 feet 6 inches, and varies from 10 dwts. to 1½ ounce per ton, the larger size being of the former quality. Over No. 11 level the reef is from 10 inches to 12 inches thick, worth, say, 16 dwts. per ton. At the back of No. 9 level the reef is worth, say, 1½ ounce per ton, but the length is short. In one portion of the slope the reef is 18 inches thick, worth, say, 1 ounce per ton. Over No. 8 level south stoping has been commenced; the reef is about 1 foot thick, worth, say, 22 dwts. per ton. Owing to heavy rains the mines make a great deal more water than usual, which increases the cost of pumping.

OREGUM.—Superintendent's report for fortnight ending April 10: Taylor's shaft has been sunk 11 feet 9 inches, total depth below the 460 feet level 77 feet. Lode 1 foot 6 inches, value 3 ounces 7 dwts. 12 grains. 460 feet level south advanced 35 feet, total 232 feet 6 inches. Lode 4 feet, value 1 ounce 20 grains. No. 1 winze, 460 feet level south commenced 3 feet 9 inches sunk. Lode 3 feet, value 10 dwts. 20 grains. No. 3 winze 360 feet level south sunk 5 feet 6 inches, total 62 feet. Lode 2 feet, value 1 ounce 12 dwts. 16 grains. No. 4 rise 280 feet level south 2 feet 6 inches risen, total 73 feet 6 inches. Lode 1 foot 6 inches, value 2 ounces 6 dwts. 19 grains. Wallroth's shaft sunk 10 feet, total 827 feet 6 inches. Lode 2 feet, value 1 ounce 17 grains. 760 feet level south advanced 17 feet 3 inches, total 93 feet 3 inches. Lode 2 feet, value 13 dwts. 2 grains. 760 feet level north advanced 13 feet, total 71 feet 9 inches. Lode 1 foot 6 inches, value 7 dwts. 14 grains. 660 feet level south advanced 28 feet, total 467 feet 6 inches. Lode 1 foot 6 inches, value 1 ounce 1 dwts. 19 grains. No. 1 winze 660 feet level south sunk 2 feet 9 inches, total 46 feet 9 inches. Lode 1 foot 3 inches, value 2 ounces 6 grains. No. 2 winze same level sunk 4 feet 9 inches, total 27 feet 6 inches. Lode 9 inches, value 6 dwts. 12 grains. No. 3 winze same level sunk 5 feet 9 inches, total 9 feet 9 inches. Lode 1 foot, value 16 dwts. 8 grains. No. 1 winze 660 feet level north sunk 2 feet 6 inches, total 37 feet 6 inches. Lode 4 feet, value 13 dwts. 2 grains. 560 feet level south advanced 21 feet 9 inches, total 834 feet. Lode 1 foot 6 inches, value 3 ounces 5 dwts. 8 grains. No. 2 winze 560 feet level south sunk 3 feet 3 inches, total 56 feet 9 inches. Lode 1 foot, value 1 ounce 17 grains. No. 3 winze same level sunk 4 feet, total 46 feet 6 inches. Lode 1 foot, value 18 dwts. 12 grains. No. 4 winze same level sunk 4 feet, total 53 feet. Lode 2 feet, value 19 dwts. 15 grains. No. 5 winze same level sunk 7 feet, total 46 feet 3 inches. Lode 3 feet, value 2 ounces 6 grains. No. 6 winze sunk 8 feet 3 inches, total 41 feet 9 inches. Lode 1 foot 4 inches, value 12 dwts. No. 3 winze 460 feet level south sunk 5 feet 9 inches, total 40 feet. Lode 8 inches, value 2 ounces 19 dwts. 20 grains. No. 6 winze same level sunk 7 feet 3 inches, total 78 feet 3 inches. Lode 3 feet, value 1 ounce 1 dwts. 19 grains. No. 7 winze sunk 7 feet 6 inches, total 74 feet 6 inches. Lode 2 feet, value 1 ounce 17 grains. 215 feet level north advanced 23 feet 6 inches, total 317 feet 9 inches. Lode 1 foot 6 inches, value 3 ounces 4 dwts. 15 grains. Incline winze on point of fold 215 feet level north sunk 17 feet 6 inches, total 24 feet. Lode 3 feet, value 5 ounces 1 dwts. 12 grains. Low's shaft sunk 4 feet, total 557 feet 10 inches. 510 feet level south advanced 11 feet, total 112 feet 6 inches. No lode. Crosscut west from 510 feet level south advanced 1 foot 6 inches, total 16 feet 3 inches. Now suspended and men put to drive on branch of quartz passed through in same crosscut. At Probyn's shaft sinking has been resumed below the 950 feet level and will be measured for the next report. 950 feet level south advanced 11 feet, total 68 feet 6 inches. No lode. No. 1 winze 950 feet level north sunk 3 feet, total 17 feet 6 inches. Lode 6 inches, value 10 dwts. 20 grains. 850 feet level south advanced 12 feet 6 inches, total 207 feet 6 inches. Lode 3 inches, value 7 dwts. 14 grains. No. 1 winze 850 feet level south sunk 6 feet, total 30 feet 6 inches. Lode 8 inches, value 6 dwts. 12 grains. No. 1 rise 850 feet level south 9 feet 6 inches risen, total 33 feet 6 inches. Lode 1 foot, value 4 dwts. 8 grains. No. 2 winze 650 feet level south sunk 4 feet 9 inches, total 53 feet. Lode pinched.—Stopes for the month: Taylor's shaft: Back 360 feet level south stopped 33 fathoms. Lode 5 feet 9 inches, value 2 ounces 7 dwts. 2 grains. Bottom 280 feet level south stopped 55½ fathoms. Lode 7 feet, value 1 ounce 14 dwts. 4 grains. Back 280 feet level south cut 26½ fathoms. Lode 2 feet 6 inches, value 3 ounces 5 dwts. 2 grains. Bottom 150 feet level north stopped 8½ fathoms. Lode 4 feet, value 1 ounce 6 dwts. 2 grains. Back 150 feet level north stopped 9½ fathoms. Lode 1 foot 3 inches, value 1 ounce 6 dwts. 3 grains.—Wallroth's shaft: Back 560 feet level south stopped 16½ fathoms. Lode 2 feet 9 inches, value 2 ounces 1 dwts. 9 grains. Bottom 560 feet level north stopped 14 fathoms. Lode 2 feet, value 4 ounces 1 dwts. 15 grains. Bottom 460 feet level north stopped 16½ fathoms. Lode 2 feet, value 3 ounces 11 dwts. 11 grains. Bottom 360 feet level south stopped 49½ fathoms. Lode 2 feet 3 inches, value 1 ounce 17 dwts. 10 grains. Back 360 feet level south cut 3½ fathoms. Lode 1 foot, value 4 ounces 7 dwts. 2 grains. Bottom 360 feet level north stopped 2½ fathoms. Lode 2 feet, value 2 ounces 3 dwts. 13 grains. Bottom 280 feet level south stopped 25 fathoms. Lode 3 feet 6 inches, value 2 ounces 1 dwts. Bottom 280 feet level north stopped 6½ fathoms. Lode 1 foot, value 4 ounces 7 dwts. 2 grains. Bottom 215 feet level north stopped 16½ fathoms. Lode 1 foot 10 inches, value 3 ounces 14 dwts. 21 grains per ton.—Low's Shaft: Bottom 430 feet level south stopped 8½ fathoms. Lode 1 foot, value 2 ounces 1 dwts. 9 grains. Bottom 430 feet level north stopped 2½ fathoms. Lode 1 foot, value 1 ounce 5 dwts. Bottom 200 feet level north stopped 5 fathoms. Lode 6 inches, value 12 dwts. Now suspended. Bottom intermediate north back 200 feet level south stopped 5 fathoms. Lode 1 foot, value 10 dwts. 20 grains.—Probyn's Shaft: Back 650 feet level south stopped 5½ fathoms. Lode 2 feet 6 inches, value 9 dwts. 19 grains. Bottom 550 feet level south stopped 1½ fathoms. Lode 1 foot 6 inches, value 5 dwts. 10 grains. Back 450 feet level north stopped 3 fathoms. Lode 1 foot 6 inches, value 1 ounce 12 dwts. 16 grains. Bottom 300 feet level south stopped 6½ fathoms. Lode 1 foot 4 inches, value 1 ounce 8 dwts. 20 grains. Back 300 feet level south stopped 4 fathoms. Lode 2 feet 6 inches, value 2 ounces 14 dwts. 10 grains.—Exploratory Work: Wallroth's shaft, cross cut west, from 280 feet level south towards Monday's lode, advanced 42 feet, total 294 feet. No change in the ground.—Probyn's Shaft: Cross cut east from 460 feet level south advanced 29 feet 6 inches, total 149 feet 6 inches. No. 2 trial shaft sunk 2 feet 3 inches, total 222 feet 9 inches. Lode 5 feet, value 1 ounce 12 dwts. 15 grains. New machinery: The engines and pans of No. 3 set of tailings machinery have been tried to-day, and they work splendidly. A few details have to be executed, and we hope to commence operations with this machinery in two or three days from this date. No. 3 mill and engines are nearing completion, and by the end of the current month we hope to have this also in operation.—March return of gold: The following are the particulars:—Quarries crushed 3428 tons, gold obtained 8789 ounces. Tailings treated 3370 tons, gold produced 813 ounces. Total return 6602 ounces of gold.

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GEOLOGY AND MINERALOGY OF
SHASTA COUNTY.By HAROLD W. FAIRBANKS, F.G.S.A.
From the California State Mineralogist.

IV.

(Continued from page 463.)

At the spot where the upper road to the Bend crosses Roaring Creek there is an outcrop of the cretaceous shale. This is seen again along the road which descends to Big Bend, where it is said to contain some thin coal seams. Sandstones and shales outcrop also north of the Bend, dipping gently to the north east, with an exposed thickness of about 400 feet. They extend up the river a short distance, also up Nelson Creek and down the river to the mouth of Kosk Creek. This creek forms the dividing line between the lavas and the older series, and it is evident that it is also the boundary between this series and the cretaceous beds. The latter extend up the east side of the creek till hidden by the lava. Kosk Creek has cut its channel at this junction of the lava and the older rocks nearly to its source, and it has been reported that coal exists towards the head of the creek. The region north to the McCloud is one which it is almost impossible to traverse, and very little is known about it. It consists of rounded ridges rising 6000 to 7000 feet, perfectly barren of trees, and covered with thick brush.

The Big Bend Hot Springs issue from an ancient intrusive rock, seeming to be a diabase, though largely feldspathic. The springs vary from warm to boiling, and are scattered thickly along the river for a quarter of a mile, with a large volume of water in places. The rock along the river for 5 or 6 miles below the mouth of Kosk Creek is chiefly a massive, crystalline one, like that at the springs. Big Canon opens into Pitt River 7 miles below the bend. On the ridge between it and Pitt River a feldspar porphyrite outcrops, quite similar to that west of Kosk Creek, but in places it is highly amygdaloidal and scoriaceous. Slates appear in Big Canon. They strike very regularly a little west of north; dip almost vertical. The colour is black to purplish. A few scattered fossils were found in them and in the washed boulders in the bed of the creek. The canon has been eroded in the strike of the slates, and by following it up a larger collection could undoubtedly be made. The most prominent fossil is a large-ribbed bivalve shell not found in place at this point. The character of these fossils indicates a mesozoic age. Some of the fossils, as well as the slates, resemble

The Triassic of Indian Valley,

Plumas County. They are certainly younger than the carboniferous, and, according to our present accepted stratigraphy, must be older than the cretaceous.

In the cove, near the mouths of Hat and Roaring Creeks, there is a considerable area of sandstone and conglomerate exposed, the lava having been worn away. It terminates often in precipitous cliffs, and the very rapid descent to the deep canon of Pitt River has given rise to several beautiful falls.

Below Big Bend, Pitt River flows for many miles in a deep, narrow canon. Its course has been cut at the junction of the Chico conglomerates with the older series, and the conglomerates are exposed in great thickness in many places along the canon. The lavas are stratified, showing many successive flows, often fragmental at the bottom.

One half mile west of Round Mountain there outcrops slaty argillites, much contorted; strike east and west, dip 40 degrees north. Here occurs a small vein of black quartz, carrying a large percentage of galena and zinc-blende. Other deposits of these minerals of small extent are found between this point and the Afterthought Mine, on Cow Creek.

Several small pieces of a silver-white metal were obtained from Mr. Iles, 5 miles southwest of Round Mountain, and are now in the museum of the Bureau. They proved on investigation to be native zinc, not certainly known heretofore as occurring in Nature. According to Dana, it has been reported from Australia and Tennessee, but under circumstances not wholly free from suspicion. All efforts to obtain more specimens, or to have the location of the vein divulged, have been in vain. There is, of course, some doubt with regard to the genuineness of the metal, but from the fact that a small piece of rock remains adhering to one of the specimens, and that another shows a crystalline structure, such as could hardly be artificially produced, it seems to me they must be genuine.

In descending the Reed Road the first outcrop of the older series is a chloritic feldspar porphyry, with a somewhat tuffaceous appearance. Two miles west of Round Mountain a large body of limestone outcrops on both sides of Cedar Creek. This extends along the creek for 1½ miles; at one spot forming cliffs 200 feet high. This height represents about the thickness of the limestone, for it dips west at an angle of not more than 10 degrees. As the mouth of the Cedar Creek is approached the strata, chiefly slates, become much steeper, with a strike a little north of west. Limestone again appears at the mouth of Cedar Creek, where it contains numerous poorly preserved fossils, chiefly brachiopods and corals of carboniferous age. The limestone west of Round Mountain also contains similar fossils. One and a half miles below the mouth of Cedar Creek there is another mass of limestone, having a thickness of about 1000 feet. Thin beds of limestone, alternating with slate, occur near the larger one. It is probable that all these bodies of limestone belong to the same horizon, but have been separated by the folding and crushing which has taken place.

The group of mines of which the Afterthought is the most important is situated on Cow Creek, in Sec. 11, T. 32 N., R. 2 W. The veins occur in or near the contact of slate and porphyry. The direction of the veins is northwest and southeast; dip to the northeast. The ore is quite base, carrying copper (often as high as 50 per cent.); gold, silver, and some lead and zinc blende. It is due chiefly to this

Rebellious Character of the Ores

that the extensive operations begun here proved a failure. The depth reached in the Afterthought is said to have been 80 feet; the point at which the more base ores were met.

North of the Afterthought Mine is a considerable area of slaty rocks, often finely cleavable. These apparently dip south at a high angle, but a banding across them in the opposite direction seems to show that the cleavage lines are not those of sedimentation. The same thing is noticeable a mile north on the west side of the creek where the slates show plainly a dip south at a small angle, while the cleavage is nearly vertical. A little farther north these banded strata are conformable with the limestone, dipping 60 degrees to 80 degrees southwest. Between the Afterthought Mine and the limestone there is a large body of quartz porphyrite. In places this shades into a schistose rock, closely resembling a sedimentary one, but it is to be distinguished from the latter by the fact that the schistose structure runs uniformly in one direction, northeast and southwest, with a vertical dip, while that of the real sedimentary varies greatly within short distances

(To be continued.)

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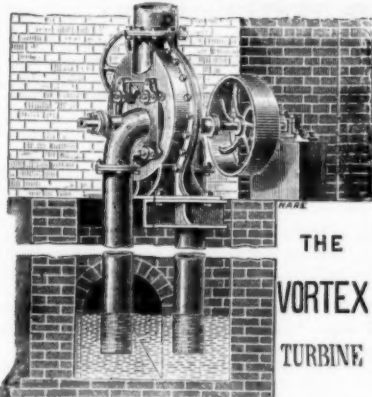
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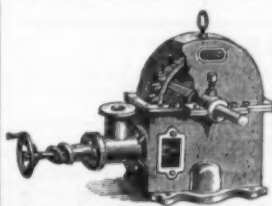
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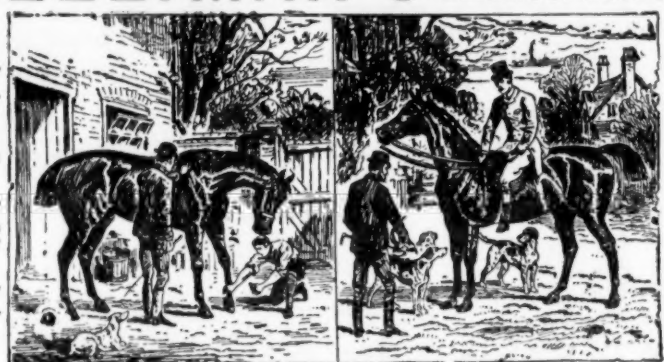
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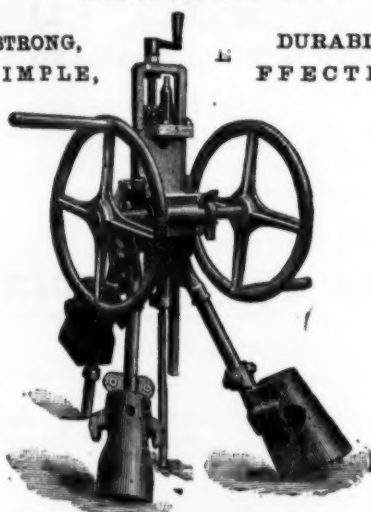
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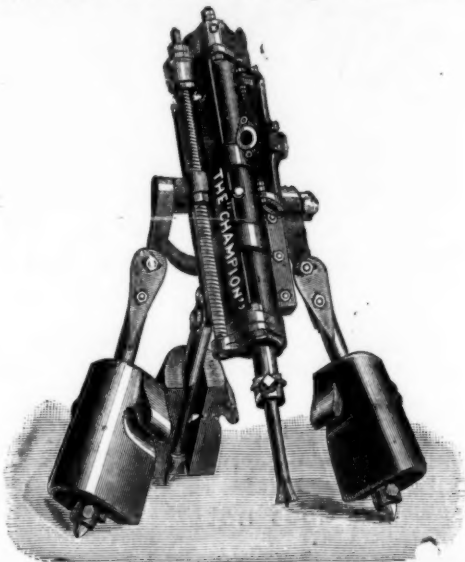
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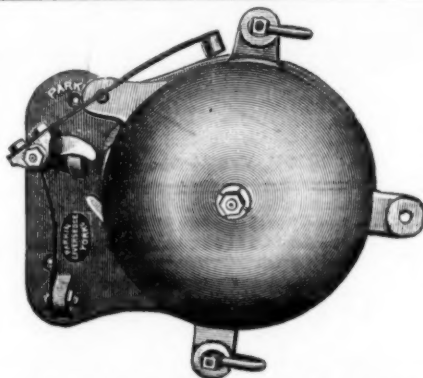
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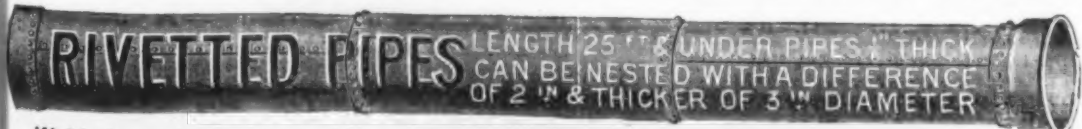
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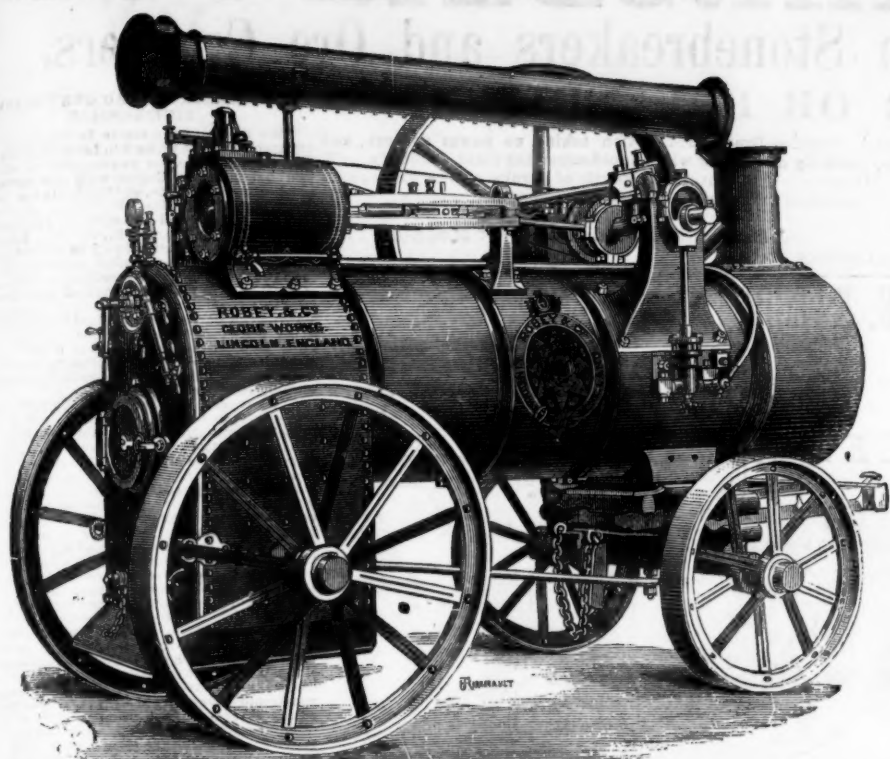
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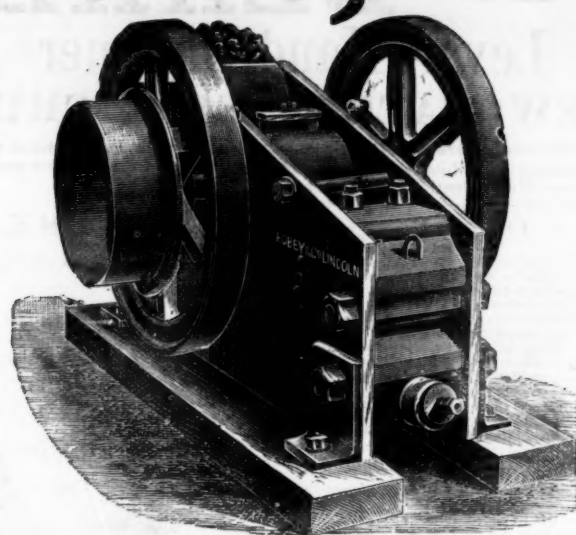


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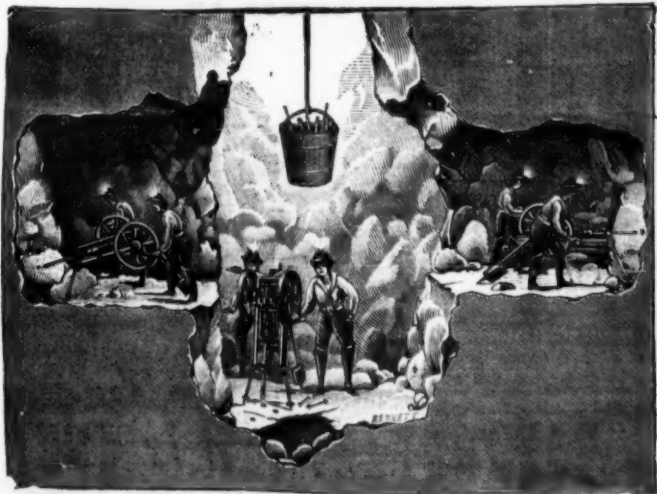
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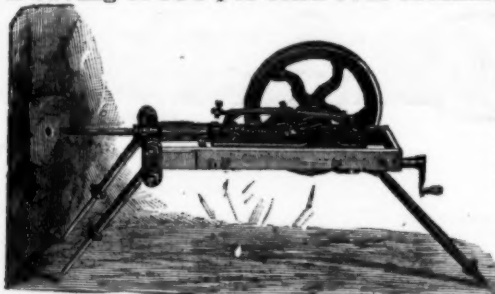
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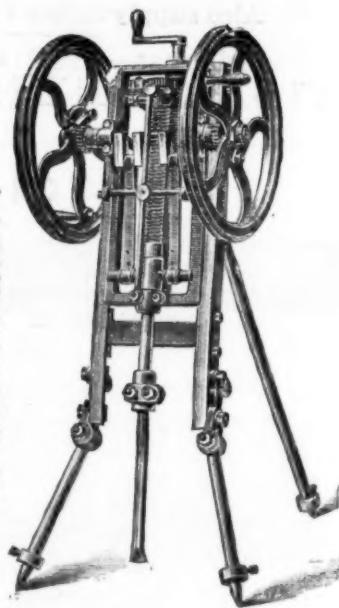
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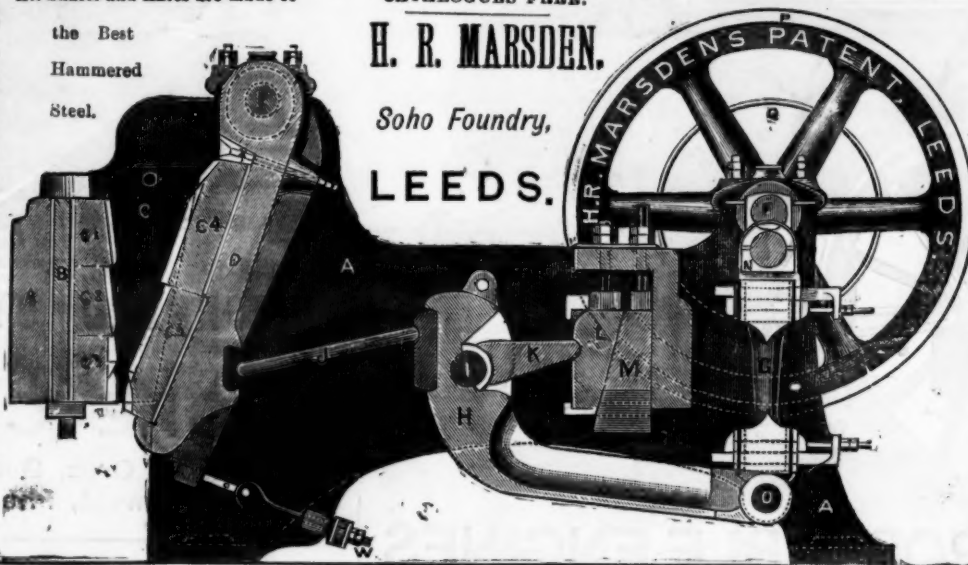
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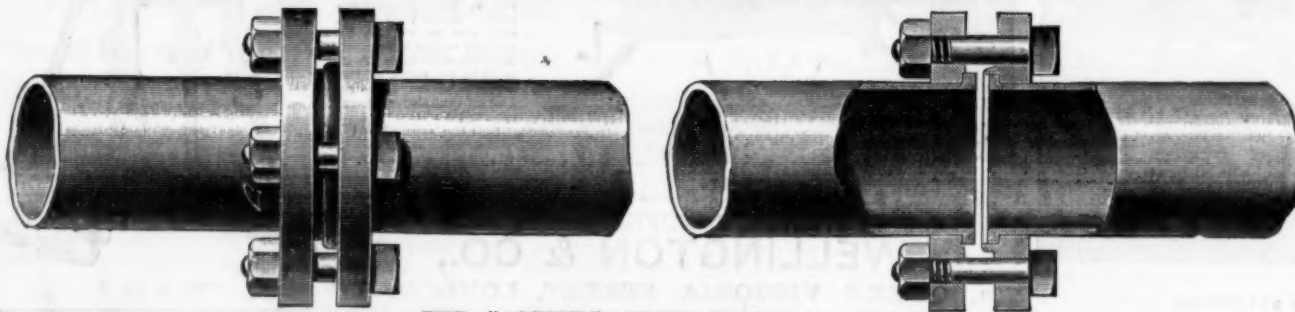
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